CLERK'S COPY

Vol. II

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1930

No. 51

SARANAC AUTOMATIC MACHINE CORPORATION, PETITIONER,

vs.

WIREBOUNDS PATENTS COMPANY ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SIXTH CIRCUIT

PETITION FOR CERTIORARI FILED FEBRUARY 20, 1930

CERTIORARI GRANTED APRIL 21, 1930

(34,806)

(34,806)

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1930

No. 51

SARANAC AUTOMATIC MACHINE CORPORATION, PETITIONER,

vs.

WIREBOUNDS PATENTS COMPANY ET AL.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SIXTH CIRCUIT

VOL. II

INDEX

	Original	Print
Stipulation re evidence	540	583
Testimony of Arthur S. Browne	542	584
Plaintiffs' Exhibit 25—Browne's sketch	568	613
Offers in evidence	649	703
From record in National Wire Bound Box Co. et al. vs. William P. Healy:		
Master's findings, certain portions of	649	703
Testimony of William P. Healy	652	707
William Ousterhout	680	738
Charles T. Williams	682	740
Norman E. Brown	683	741
Complainants' Exhibit 118—Drawing	684	742

JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., JUNE 7, 1930

	Original	Print
Testimony of Rollin A. Reed	691	730
William P. Healy (recalled)	692	731
Richard G. Inwood	698	736
Photographic reproduction of Defendant's Exhibit No. 8 from Healy record	713	776
Enlarged photographic reproduction of written descriptive matter appearing at lower left hand corner of Defendant's Exhibit No. 8 from Healy record	713	776
Photographic reproduction of Defendant's Exhibit No. 9 from Healy record	714	776
Enlarged photographic reproduction of written descriptive matter appearing at lower right hand corner of Defendant's Exhibit No. 9 from Healy record	714	776
Testimony of Perry G. Lavenberg	740	804
Samuel M. Robinson	749	815
Richard G. Inwood (recalled)	754	820
Charles E. Russ	755	821
William P. Healy, rebuttal	756	823
Richard G. Inwood, surrebuttal	779	847
From record in Wirebounds Patents Co. et al. vs. Chicago Mill & Lumber Company:		
Testimony of John L. Clough	786	856
Charles E. Russ	803	874
Benjamin F. Masters	808	881
Henry Stephens	816	889
From record in Wirebounds Patents Co. et al. vs. H. R. Gibbons Box Co.:		
Testimony of John H. McElroy, cross-examination	821	893
Plaintiffs' diagrams:		
Sheet 1	849	925
Sheet 2	850	927
Sheet 3	876	927
Sheet 4	876	927
Sheet 5	880	982
Sheet 6	901	927
Plaintiffs' Cross-exhibit Y—Used in cross-examination of McElroy in Gibbons suit	949	1004
Stipulation as to facts, etc	932	1017
Plaintiffs' Exhibit No. 28—Stipulated drawing of defendant's machine, sheet I	932	1019
Plaintiffs' Exhibit No. 29—Stipulated drawing of defendant's machine, sheet II	932	1019

	Original	Print
Plaintiffs' Exhibit No. 32—Photograph of Exhibit No. 30, per stipulation	932	1019
Plaintiffs' Exhibit No. 33—Photograph of Exhibit No. 31, per stipulation	932	1019
Testimony of Roscoe Steele	934	1019
Plaintiffs' Exhibit No. 34—Plaintiffs' drawing of defendant's machine at Maxwell Bros. plant, Macon, Ga., sheet I	937	1022
Plaintiffs' Exhibit No. 35—Plaintiffs' drawing of defendant's machine at Maxwell Bros. plant, Macon, Ga., sheet II	939	1025
Testimony of John Howard McElroy	969	1058
Testimony of Roscoe Steele	985	1076
Plaintiffs' Exhibit 37—Excerpt from catalogue of Chase Turbine Mfg. Co.	991	1083
Plaintiffs' Exhibit No. 36—Plaintiffs' drawing of Chase Turbine Mfg. Co. cleat cutting machine	992	1084
Plaintiffs' Exhibit No. 38—Plaintiffs' drawing illustrating alternative use of positioning blocks to engage cleat shoulders or cleat ends.	999	1091
Plaintiffs' Exhibit No. 41—Plaintiffs' drawing illustrating use in defendant's third machine of cleats having tongues $\frac{1}{8}$ inch shorter than intended	1006	1099
Plaintiffs' Exhibit No. 42—Plaintiffs' drawing illustrating use in defendant's third machine of cleats having tongues $\frac{1}{8}$ inch longer than intended	1008	1100
Plaintiffs' Exhibit No. 43—Plaintiffs' drawing illustrating impracticability of spacing cleats ant's machine	1011	1104
Plaintiffs' Exhibit No. 44—Diagram of plaintiffs' early machine employing positioning blocks which engage cleat shoulders	1049	1145
Testimony of Anton J. Wawernyk	1057	1153
Stipulation re narrative statement of evidence	1060	1156
Order approving narrative statement of evidence	1060	1157
Opinion, Raymond, J.	1061	1158
Final decree	1066	1164
Petition for appeal and allowance thereof	1067	1165
Assignment of errors	1068	1165
Bond on appeal (omitted in printing)	1070	
Citation and service (omitted in printing)	1071	
Praecipe and stipulation	1072	1168
Orders extending time for filing transcript	1080	1177
Plaintiffs' Exhibit 22-A—Page 22, April, 1923, issue "Packages"	1083	1178
Plaintiffs' Exhibit 22-B—Page 4, June, 1923, issue "Packages"	1085	1178

	Original	Print
Plaintiffs' Exhibit 22-C—Page 7, August, 1923, issue "Packages"	1087	1178
Plaintiffs' Exhibit 22-D—Page 26, April, 1924, issue "Packages"	1089	1178
Plaintiffs' Exhibit 22-E—Front cover, April, 1925, issue "Packages"	1091	1178
Plaintiffs' Exhibit 22-F—Page 17, May, 1925, issue "Packages"	1093	1178
Plaintiffs' Exhibit 22-G—Page 55, April, 1923, issue "Barrel and Box"	1095	1178
Plaintiffs' Exhibit 22-H—Page 52, July, 1923, issue "Barrel and Box"	1097	1178
Plaintiffs' Exhibit 22-I—Page 31, April, 1924, issue "Barrel and Box"	1099	1178
Plaintiffs' Exhibit 22-J—Page 35, April, 1925, issue "Barrel and Box"	1101	1178
Plaintiffs' Exhibit 22-K—Page 33, May, 1925, issue "Barrel and Box"	1103	1178
Plaintiffs' Exhibit 37—Excerpt from catalogue of Chase Turbine Mfg. Co.	1105	1178
Plaintiffs' Exhibit No. 1—Inwood & Lavenberg work-holder patent in suit No. 1,128,141	1111	1178
Plaintiffs' Exhibit No. 2—Inwood & Lavenberg machine patent in suit No. 1,128,145	1121	1193

STIPULATION RE EVIDENCE

It is stipulated that each party may offer in evidence and print for the active record, in accordance with the stipulation of May 19, 1925, any desired parts of prior records (including exhibits) referred to in said stipulation of May 19, 1925; and that either party, upon giving specific notice to the other party ten days before final hearing, may then offer in evidence and print and use any desired additional parts of said prior records, and with the same force and effect.

Defendant's counsel offers in evidence the following exhibits:

Defendant's Exhibit 11—Certified copy of the file-wrapper and contents of the original Inwood & Lavenberg patent for "Improvement in Boxes," No. 799,854, granted Sept. 19, 1905.

Defendant's Exhibit 12—Certified copy of the file-wrapper and contents of the reissue patent of Inwood & Lavenberg for "Improvement in Boxes," No. 12,725, granted November 26, 1907.

Defendant's Exhibit 13—Certified copy of the file-wrapper and contents of Inwood Lavenberg patent for "Improvement in Methods of Making Boxes," No. 1,128,252, granted February 9, 1915.

Defendant's Exhibit 14—Certified copy of the file-wrapper and contents of Inwood and Lavenberg patent for "Improvement in Means for Making Box Blanks," No. 1,128,145, granted February 9, 1915.

Defendant's Exhibit 15—Certified copy of the file-wrap- [fol. 541] per and contents of Inwood & Lavenberg patent for "Improvement in Combined Carriages and Formers for Wirebound Box Machines," No. 1,128,144, granted February 9, 1915.

Defendant's Exhibit 16—Volume of prior art patents set up in the answer as amended.

Defendant's Exhibit 17—Copy of defendant's record in suit of these plaintiffs against the H. R. Gibbons Box Co., Northern District of Illinois, Eastern Division, Equity No. 2689, together with the exhibits offered therein.

Defendant's Exhibit 18—Volume containing patents owned by defendant as follows:

No. 1,208,297, dated December 12, 1916, for Box and Process of Manufacture Thereof, granted to Edward Craig.

No. 1,258,989, dated March 12, 1918, for Wire-bound Box Blank Machine, granted to Edward Craig.

No. 1,384,[illegible], dated July 12, 1921, for Box-Blank Machine, granted to Edward Craig.

No. 1,132,515, dated March 6, 1915, for Box-Blank Machine, granted to Edward Craig.

No. 1,254,779, dated January 29, 1918, for Wire-bound Crate Side Machine granted to Edward Craig and William H. Ray.

Stipulation

It is stipulated that the patents constituting Defendant's Exhibit 18 are owned by defendant.

[fol. 542] Evidence on Behalf of Plaintiffs in Rebuttal at First Hearing.

Rebuttal Deposition of Arthur S. Browne.

Direct Testimony in Narrative Form by Agreement of Counsel

State of Illinois,
County of Cook, ss:

Arthur S. Browne, being first duly sworn, deposes and says as follows:

1. I reside at Washington, D. C. My profession is that of a patent and mechanical expert. I was graduated from Dartmouth College in 1881 and for the past forty years I have been engaged in my present profession. I have testified as an expert witness in more than five hundred patent suits in the United States courts.

2. I have read and I understand the three patents here in suit, namely:

Inwood and Lavenberg Carriage and Former patent No. 1,128,144, dated February 9, 1915;

Inwood and Lavenberg Blank Machine patent, No. 1,128,145, dated February 9, 1915;

Inwood and Lavenberg Method patent, No. 1,128,252, dated February 9, 1915.

I have been familiar with these patents and with the structures and method therein disclosed, for several years. I testified as an expert witness on behalf of the present plaintiffs in a suit against the Chicago Mill & Lumber Company in the United States District Court for the Northern District of Illinois, Eastern Division, which was decided by his Honor, Judge Sanborn, on May 23, 1916, opinion appearing at 238 Fed. Rep. 929. In that suit, the Inwood and Lavenberg reissue patent No. 12,725, entitled "Box," was involved, and in the study of that patent and in preparation for my testimony in that suit, I became familiar with the machines used and method practiced by the plaintiffs' licensees in the manufacture of wirebound boxes.

3. In the summer of 1922 I visited the factory of H. R. Gibbons Box Company, located at 1240 West Lake Street, Chicago, Illinois. I am informed that, according to a stipulation of record in the present suit, the defendant Saranac Automatic Machine Corporation, has leased machines and licensed the use thereof for the manufacture of wirebound [fol. 543] box blanks, to this H. R. Gibbons Box Company. At the time and place just named, I examined the machines there employed by H. R. Gibbons Box Company for the manufacture of wirebound boxes; and I witnessed the method there employed in making the boxes and also examined numerous completed blanks and boxes. I then and there saw two machines for making wirebound box blanks, only one of which was running during my visit. Each of these machines had on it a name plate with the following inscription: "Property of Saranac Automatic Machine Corp., Benton Harbor, Michigan. Patented."

4. Said H. R. Gibbons Box Company was the defendant in the suit of these plaintiffs, in equity No. 2689, in the District Court of the United States for the Northern District of Illinois, Eastern Division. I testified as patent and mechanical expert for plaintiffs on their opening case and on rebuttal.

5. I have read and understand the testimony of Roscoe Steele, a witness for plaintiffs, in the present suit, which was taken beginning Friday, May 29, 1925, and I have examined the exhibits referred to in said testimony.

6. I have read the deposition of Mr. John Howard McElroy on behalf of defendant, including his direct testimony entitled "Affidavit" and his testimony on cross-examination; and I have particularly studied the patents referred to by Mr. McElroy and the photographs and other exhibits mentioned in his testimony.

The Machine Patents in Suit

7. These are two: one for a workholder or "Combined Carriage and Former for Wirebound Box Machines," No. 1,128,144, patented February 9, 1915; and the other for an organized blank machine, No. 1,128,145, patented February 9, 1915, which illustrates a machine having stapling accessories and binding wire mechanism for stapling the binding wire to box blanks assembled in the workholder of the first named patent.

8. The fundamental mechanism essentials disclosed in these patents as well as their novelty over the prior art, relate to the positioning of box parts including cleats, individually and in relation to each other, preparatory to and during the attachment of binding wires, so that the opera- [fol. 544] tion of attaching the binding wires will find the box parts in definite relationships and will perpetuate those relationships so as to predetermine the manner in which all the box parts will be co-ordinated in the finished box.

9. The workholder patent in suit discloses apparatus to perform these positioning functions without regard to the manner or means of attaching the binding wires. The blank machine patent in suit discloses one way in which the workholding apparatus of the first named patent, in the performance of its positioning functions, may co-operate with stapling accessories for the purpose of applying binding wires progressively by mechanical and largely automatic means along the length of the assembled parts of box blanks as they are characteristically positioned in the workholder.

10. Defendant's witness, Mr. McElroy, discusses at length the feeding or transporting of assembled box parts past stapling devices which attach the binding wires. And Mr. McElroy asserts certain resemblances in these transporting functions as preformed in defendant's machines and in machines of certain of the prior art patents. For instance,

Mr. McElroy says, in effect, that some of the prior art Rosback patents taught the idea of using pushers on endless chains to push long strips of cleat material through a stapling and wire-applying machine; and he concludes that defendant has followed that teaching in its machine, which employs pushers for pushing individual preformed cleats through a stapling and wire-applying machine.

11. Whether or not this resemblance is correctly stated by Mr. McElroy seems to me wholly immaterial. The subject-matter of the patents in suit does not relate to transporting means or functions but to positioning means and functions. These essential positioning functions are performed according to the teachings of the patents in suit even if the workholding apparatus be held stationary, and be not transported at all, during the wiring attaching operation. Whatever the prior art patents may have taught with regard to transporting, they were devoid of any teaching pertinent to the positioning functions emphasized in the patents in suit. However it may be supposed that defendant's machines resemble the prior art Rosback machine in the matter of transporting box parts, it remains (1) that the Rosback patents disclosed nothing pertinent to the positioning devices and functions of defendant's machines, while (2) the latter follow in every essential respect the teachings of the Inwood and Lavenberg [fol. 545] patents in suit with the result, in my opinion, that defendant's machines are the clear functional and mechanical equivalents of the machines of the patents in suit in every respect pertinent to these positioning offices.

12. Mr. McElroy has evidently overlooked (or else has ignored) the emphasis which is placed upon the positioning functions in the patents in suit. For instance, in the workholder patent No. 1,128,144, specification, page 3, line 49 et seq., occurs the following:

"As will be apparent to those skilled in the art, this invention constitutes an important advance in the box making industry; especially in that it provides *for the first time** mechanical means for controlling side material and separate individual cleats (which may be made of cheap

*Italics are deponents unless otherwise indicated.

waste material) preparatory to applying binding wires thereto by which to form finished foldable wirebound box blanks or blank sections."

"The invention is of course not limited to the specific construction, organization and mode of operation hereinbefore described for illustration."

13. And in the blank machine patent No. 1,128,145, specification page 4, line 8 et seq., occurs the following:

"As will appear to those skilled in the art, this invention constitutes an important advance in the box making industry; especially in that it provides *for the first time* mechanical means for controlling side material and separate individual cleats, preparatory to applying binding wires thereto, in combination with means for foldably connecting said parts to form finished foldable wirebound box blanks. The invention is, of course, not limited to the specific construction, organization and mode of operation hereinbefore described for illustration."

14. The excerpts just quoted truly state the novelty of the patented subject-matter, at least in one important aspect thereof, as I have observed that novelty in contrasting the patents in suit with the prior art.

15. I note that Mr. McElroy admits that he does not find anywhere in the prior art the subject-matter of the excerpt I have quoted from the workholder patent (McElroy, X Q. 95); and that he does find that subject-matter in defendant's machine (X Q. 97). Also Mr. McElroy admits that he cannot find in the prior art the subject-matter of [fol. 546] the excerpt quoted above from the blank machine patent (X Q. 103):

"understanding that the phrase 'individual cleats' applies to eight preformed cleats as distinguished from the two cleats subsequently cut up into eight as shown in the Roslack series of patents";

while he does find that same subject-matter in defendant's machines (X Q. 105).

16. In the blank machine patent on page 1, line 28, et seq., the specification contains the following statement of the subject-matter of the patent, namely:

"* * * an organized machine comprising fastener applying means, and work-controlling means, arranged to present to said fastener applying means the parts of a blank for a box having side material and individual cleats * * * the fastener applying mechanism and the work-controlling means co-operate to drive staples astride of binding wires, through side sheet material and into the individual cleats, the side sheet material and individual cleats being *presented in the proper relations* to receive the wire and staples."

Mr. McElroy admits that he does not find this subject-matter in the prior art (X Q. 98), while he does find that subject-matter in defendant's machine (X Q. 102).

17. In view of these above-quoted excerpts which characterize the patents in suit, it is evident to me that those patents are not at all concerned with the transporting functions to which Mr. McElroy alludes; but are concerned primarily with the positioning functions (in the workholder patent) and in their co-ordination with wire applying functions (in the blank machine patent), all of which Mr. McElroy cannot find in the prior art but does find in defendant's machines.

18. My opinion in these respects is confirmed by reference to the claims of the machine patents in suit which clearly relate to the positioning means and functions regardless of the use or non-use of transporting functions. For instance, the following are illustrative claims of the workholder patent No. 1,128,144:

"34. In a work-controlling means for use in assembling a sectional box blank, a plurality of means for positioning respective box sections, the said means being relatively constructed and arranged to position their respective box sections in co-operative foldable relationship."

[fol. 547] "39. Work-controlling means for use in assembling box parts to be folded and secured together in making boxes, comprising, in combination, cleat positioning means to receive a plurality of cleats disposed substantially end to end; and means to space endwise apart one said cleat for a given side of the box and another said cleat

for a non-adjacent side of the box, a distance appropriate to dimensions of a desired intervening box slide."

19. The following are illustrative claims from the blank machine patent No. 1,128,145:

"36. A machine for making box blanks comprising, in combination, work-controlling means for positioning a plurality of box sections in co-operative foldable relationship; and mechanism for foldably connecting said sections."

"61. A machine for making box blanks comprising, in combination, work-controlling means to receive a plurality of cleats disposed substantially end to end and pertaining to non-adjacent sides of the intended box, constructed and arranged to space said cleats apart endwise a predetermined distance appropriate to intended dimensions of the box side between said non-adjacent sides, to permit said cleats to be foldably connected and folded into substantially parallel relationship; and means for foldably connecting the cleats so spaced."

20. I do not comment upon the possible interpretation of these claims and I have quoted them here in support of my opinion that the patents in suit relate to *positioning;* and that matters of transporting and possible resemblances between the prior art and defendant's machines as regard transporting are wholly beside the point.

The Workholder Patent in Suit No. 1,128,144

21. In order to make wirebound boxes such as are produced by the licensees of both plaintiffs and defendant, and to make them rapidly and economically, it is important that the previously formed cleats and side sheets should be readily assembled in proper relations to each other and should be maintained in their correct relationships during attachment of the wires. For the sake of economy, it is important that the assembling of the cleats and sheets should be done by unskilled labor. In wire-bound box factories [fol. 548] that I have visited where plaintiffs' machines were in use and also in the H. R. Gibbons Box Company factory where defendant's machine was in use, the assembling was rapidly and easily done by girls and youths,

little training and no skill being required to enable them to perform these duties satisfactorily.

22. The illustrative work-controlling means shown in patent No. 1,128,144 comprises positioning means to receive the cleats in pairs and end to end, i. e., in endwise alinement; spacers which determine the correct longitudinal positions of the cleats in their respective rows, so as to insure their proper relations in the box; and means to position the side sheets in proper relation to the cleats and to maintain the sheets in place directly above the cleats.

23. As shown in Fig. 1 of the drawing of patent No. 1,128,144, there are two parallel channel-shaped bars to receive the cleats. These channeled bars are adjustably spaced apart depending upon the length of the box to be made. The workholder has its channeled bars each long enough to receive four cleats disposed in a row. Each channeled bar has spacer blocks 6, which are adjustable lengthwise of the bar to accord with the desired dimensions of the box; and the spacers 6 properly locate the several cleats in relation to each other (having in view the size of the completed box). The unskilled attendants quickly and easily place the cleats in the channels between the spacers. As explained by Mr. Steele, the standard practice is to place each cleat with its rear end in contact with the spacer block positioned to determine the location of the rear end of the cleat.

24. The veneer sheets are placed over the cleats and are maintained in their places by means of the rod 14 shown at the left of Fig 1. This rod 14 is connected at its ends to pivoted arms 12. As shown in Fig 1, this rod 14 is out of the way so as to permit the insertion of the cleats and the placing of the side sheets. After this has been accomplished, the rod 14 is swung over to the position shown in Fig. 6, thereby maintaining the side sheets in proper plane relative to the cleats. The pivot arm 12 at one end of the workholder may be used as a positioning device against which to place the edge of an adjacent veneer sheet, after which the other veneer sheets may be laid down in succession with their edges substantially contacting.

25. This workholder patent No. 1,128,144, as well as the blank machine patent No. 1,128,145, and the method patent in suit, shows the workholder as just large enough to ac-

[fol. 549] commodate a single blank and shows an illustrative form of device which may be used for positioning in proper relationships the parts of a single blank. The specific form of workholder illustrated in these patents is detachable from the blank machine so that it can be loaded when so detached. The blank machine patent in suit, beginning at page 3, line 106, says:

"We wish it to be understood that this invention is not to be limited to the use of removable carriages or formers such as described, and which are in the nature of adjuncts applicable to the wire feeding and stitching machine. Any means for positioning the separate parts of the blank material in proper relation, as broadly defined in the claims, may be substituted for the formers, or carriages, described, whether removable from and replaceable in the machine, or otherwise."

26. Plaintiffs' commercial machines as used now, and also as used when I first became familiar with them over nine years ago, did not have the removable and replaceable carriages, but instead used endless feed chains carrying the spacer blocks for the cleats, and also they usually had positioning devices for the side sheets; likewise, the particular forms of positioning devices shown in the patents in suit have been modified appropriately to different shapes of cleat ends that are employed in commercial practice. So far as the essential functions and mechanical elements are concerned, however, the workholding devices of plaintiffs' present machines are the same in mechanical principle as disclosed in the patents in suit.

27. It seems self-evident that the workholding elements just described having the primary purpose of relatively positioning box parts including cleats, embodies a distinctive character of *positioning* elements having no relationship whatever to the transporting functions alluded to by Mr. McElroy. The workholder causes each box part placed thereon, whether cleat or sheet, to be positioned in a definite relationship to all the other parts of the workholder. The parts are held in these relationships while the binding wires are being applied. The resulting flat blank has these relationships perpetuated so that the parts must assume and

permanently occupy predetermined relationships in a predetermined co-ordination, in a finished box.

28. So long as the workholder performs the *positioning* functions, the binding wires may be applied in any one of a variety of ways. For instance, the workholding devices and [fol. 550] the positioned box parts may remain stationary while the binding wires are laid on and stapled in place by hand or by staple-driving mechanisms which travel from point to point along the length of the blank. Or else the workholder and the positioned box parts may be moved by a continuous steady motion past staple-driving devices which drive staples progressively from point to point on the moving work. Otherwise the workholder and the positioned box parts may be moved step by step past stapling devices which operate in a fixed vertical plane to drive staples during each intermittent period of rest of the box parts. The important desideratum, from the mechanical viewpoint, is that the workholding devices shall maintain the individual and relative positions of the box parts so that the attachment of the wires shall perpetuate those relationships, quite regardless of the manner in which the wires may be applied for this purpose.

The Blank Machine Patent in Suit No. 1,128,145

29. This patent teaches the use of the workholder already described in an organized stapling machine having a largely automatic operation. The workholder performs its positioning functions and with its load of assembled and related box parts is fed past conventional staple forming and driving devices. The binding wire is laid upon and stapled to successive points along the length of the blank.

30. The longitudinal cleat positioning bars on the workholder have rack teeth on their lower faces as shown in Fig. 2 of the workholder patent 1,128,144 and also in Fig. 1 of the machine patent 1,128,145. The blank machine has a bed plate upon which the workholder is placed. The bed plate is slotted to receive the toother rolls 38 (blank machine patent Fig. 1) which are adapted to engage with the rack teeth on the workholder. The feed rolls 38 are rotated step by step by automatic driving mechanism as illustrated. Accord-

ingly, when the workholder is placed on the machine in engagement with the first feed roll 38, as shown in Fig. 1, the workholder is advanced intermittently until its rear end passes beyond the second feed roll 38 shown on the discharge side of the machine in Fig. 2.

31. The binding wires are carried on the reels 51, three reels being shown for supplying three binding wires, one along each row of cleats, and the third wire along the middle of the box where it is stapled to the side sheets only. Each [fol. 551] wire runs from its reel 51 to a guide roll 52 immediately above the plane of the side sheets. Each wire extends into the vicinity of a staple driver, there being a separate staple driver for each wire.

32. As the side sheets and cleats in the workholder are intermittently fed through the machine, the staples are automatically driven so as to straddle each binding wire, and the staples which straddle the binding wires at the transverse edges of the blank are driven through the side sheets into the cleats, securing the side sheets to the cleats, and the successive side sections are thus bound and connected together by the wires, and the relationships of the parts as determined by the positioning elements of the workholder are thus perpetuated by the attachment of the wires. The binding wires are fed along by being stapled to the advance end of the blank and by being then dragged along by the advancing movement of the blank. The resulting rearward pull by the wire assists to keep the rear ends of the cleats in contact with the positioning blocks behind them, thus insuring the maintenance of the cleats in their proper relative positions with their rear ends located against the respective positioning blocks.

33. The two feed rolls 38 are located at opposite sides of the stapling point, and the feed roll which is at the discharge side of the machine (Figs. 2 and 3), carries the completed blank beyond the staplers, thereby producing lengths of unattached binding wire beyond the rear of the blank preparatory to starting the attachment of the binding wires to the next following blank. Successive box-blanks are thus connected by the binding wires, with space between the neighboring ends of the blanks providing sufficient lengths of wire so that when cut between one blank and the next, ends

of wires will be provided projecting beyond the ends of each blank sufficiently to allow for twisting the wire ends together to complete the closure of the box and the encircling binding wire.

34. It is desirable that the staples should not be driven too close to edges of the side sheets, but at some distance therefrom, so as to allow for the relative longitudinal shifting of the adjoining edges of the side sheets. To insure the correct registration between the leading edge of the box-blank and the stapling mechanism, a hand-controlled auxiliary feed for the workholder is provided as described in the specification of the blank machine patent beginning at line 61, page 2. This auxiliary feed is effected by the horizontal hand lever 44, shown in Figs. 1 and 2, by means of which the [fol. 552] carriage can be fed forward by the attendant, as well as by the automatic power feed.

35. According to this blank machine patent in suit, the workholder performs those important positioning functions by which its preformed box parts are held in those relationships which are to be perpetuated by the attachment of the wire; in other words, the workholder performs the distinctive positioning functions which characterize the workholder patent in suit. But to accommodate the specific form of blank machine shown in the blank machine patent in suit, the workholder is called upon to perform a secondary function, namely, to transport the assembled box parts past the staple driving point. It is self evident, however, that this transporting office is incidental and of subordinate importance, relevant only to the illustrative type of stapling mechanism shown in the patent. The important consideration is that each box part shall be correctly positioned when it is about to receive a wire attaching staple; and it is of negligible if any importance whether that box part is first transported from elsewhere to a stationary stapling point or whether the box part itself remains stationary while the staple driver is transported to proper position for driving the staple. In short, the subject-matter of this patent is simply the novel character of relative positioning of box parts including cleats, plus the perpetuation of those relationships by the wire attaching quite regardless of the manner or means of attaching the wires.

36. As I have already pointed out, the claims in suit of this blank machine patent make no reference to the use or non-use of any transporting function; on the contrary they recite the positioning elements plus a very broad expression of "mechanism for foldably connecting said sections" which, as a matter of mechanics, may or may not involve the performance of some secondary transporting office.

The Prior Art with Reference to the Machine Patents in Suit

37. I have already alluded to the fact that Mr. McElroy states (what I have observed to be the fact) that the prior art does not show the subject-matter expressly claimed to have been provided "for the first time" by the apparatus of these machine patents.

38. The workholder patent says that the invention thereof [fol. 553] "provides for the first time mechanical means for controlling side material and separate individual cleats (which may be made of cheap waste material) preparatory to applying binding wires thereto by which to form finished foldable wirebound box blanks or blank sections."

39. And the blank machine patent says that its invention "provides for the first time mechanical means for controlling side material and separate individual cleats, preparatory to applying binding wires thereto, *in combination* with means for foldably connecting said parts to form finished foldable wirebound box blanks."

40. On the subject of novelty Mr. McElroy testifed as follows:

"X Q. 16. Then you do not find in the prior art any disclosure of any sort of mechanical contrivance for locating two individual cleats in line and spaced apart in proper relationship to be wired together and then folded so as to constitute parts of the same box?"

"A. No, I do not; understanding that by 'mechanical contrivance' you have in mind what would ordinarily be called a machine.

* * * * * * *

"X Q. 23. Where, if at all, in the prior art do you find any machine having two devices arranged to contact respectively with the rear end of two cleats for locating two individual cleats in line in proper relationship to be wired together and then folded so as to constitute parts of the same box?

"A. As I recall it, there is no machine arranged to do this, with all the limitations expressed in your question.

"X Q. 24. What is the machine in the prior art which represents the nearest approach you have been able to find to the arrangement just described in my X Q. 23?

"A. That would depend a little on the angle from which the question was approached. So far as the use of the plurality of cleats at the same time on the same machine is concerned, I would say that the structure of the Fuller patent 694,467 is the most pertinent, but of course Fuller did not wire his basket tops together. However, consider-[fol. 554]ing the fact that any mechanic would naturally use as many cleat pushers as might be necessary to push the required number of cleats for a blank, it seems to be that the Rosback patent 614,348 is really the more pertinent.

"X Q. 25. In the Fuller patent 649,467, there is no suggestion whatever of locating any two parts in a foldable relationship and then wiring them together in that relationship. That's correct, is it not?

"A. It is.

"X Q. 26. And is that one of the reasons why you consider the Fuller patent less pertinent than the Rosback patent?

"A. It is.

"X Q. 27. But none of the Rosback patents makes any suggestion whatever of locating any two individual parts in a foldable relation and then wiring them together in that relation. That is correct, is it not?

"A. That would be my recollection. Throughout the Rosback series, as I recall it, the idea was to do the wiring first and then saw out the individual cleats from strips the length of the blank.

"X Q. 28. None of the Rosback blank machines which applied the binding wires, ever dealt with preformed individual cleats at all. That is correct, is it not?

"A. As I recall it, the wiring mechanism could have done so, but he did not contemplate that method.

"X Q. 29. Can you point to any disclosure in any of the Rosback line of patents, or in any other prior art patents, indicating knowledge in the prior art that two preformed individual cleats could be mechanically positioned in line in foldable relationship and then wired together to perpetuate that foldable relationship and permit the cleats to be folded so as to constitute parts of the same box.

"A. I think I have previously said that there was no machine that I recall that was specifically designed to do what is set out in your question.

* * * * * * *

"X Q. 34. To facilitate the reading and understanding of this record I now repeat verbatim the question, still unanswered, which preceded the foregoing colloquy of counsel, namely: Please point out the very best example you have been able to find in the prior art indicating any knowledge that two preformed individual cleats could be mechanically positioned in line in foldable relationship and then [fol. 555] wired together to perpetuate that foldable relationship and permit the cleats to be folded so as to constitute parts of the same box.

"A. I would say that the Healy patent No. 768,123 is probably as enlightening as any other, remembering that it was known in the art from the Rosback patent to use wires to bind blanks together by stapling over the wires, through the sides, and into the cleats. This Healy patent shows the same kind of a structure, only he uses metal strips secured 'by nails, rivets, prongs, or screws' instead of the binding wires. I would understand from this patent that the cleats 12 are preformed separately and it would seem to be the most natural thing in the world to line these cleats up in a holder, place the sides over them, and then nail down the binding strips 7, and I am of the opinion that any carpenter being presented with the job of manufacturing these Healy boxes in quantity, would, as a matter of course, make up a holder for the cleats. Obviously such a holder made to make the Healy box, could be used to make the Inwood and Lavenberg box with the wires substituted

for the metal strips shown by Healy. Does that answer the question?

"X Q. 35. This Healy patent 768,123, then, is the best support you find in the prior art for the theory you just stated?

"A. I think it is as good as any.

"X Q. 36. But the Healy patent does not disclose any mechanical contrivance at all to be used as a workholder. That is correct, is it not?

"A. It is.

"X Q. 37. Can you point to any mechanical means in the prior art which would have served the purpose of assembling the parts of the Healy box in position to be secured together to receive the straps?

"A. As I recall it, all of them would have had to have some modifications."

From this testimony I understand Mr. McElroy's testimony to be that there is nothing whatever in the prior art which taught the underlying concept of the machine patents in suit, namely, the provision of mechanical means for relatively positioning alined cleats in co-operative foldable relationship preparatory to attaching binding wires, so that the attachment thereof foldably connects the cleats and perpetuates their foldable relationship so as to predetermine their co-ordination in the [fol. 556] finished box. I agree with this evident conclusion at which Mr. McElroy seems to have arrived.

41. I am also inclined to agree with Mr. McElroy that the Fuller patent No. 649,467 and the Rosback patent No. 614,348 represent perhaps the nearest approach in the prior art to the Inwood and Lavenberg ideas of the machine patents in suit. But it is quite clear to me that the teachings of those prior patents point to machines, methods and results which are fundamentally different in character from those disclosed for the first time in the patents in suit. In other words, Inwood and Lavenberg having these prior patents presumptively before them, ignored and discarded their teachings and blazed a radically new and original trail.

42. The Rosback patent No. 614,348, for example, is one of a succession of related patents* which represent the prior art attempts to make some sort of a wirebound box. These are the patents which were involved in about *thirteen years* of experiment (preceding the inventions of the patents in suit) by which a series of inventors and business men attempted to establish a business in the so-called "Rosback" or bent-veneer box, as described elsewhere in this record.

43. The patents listed in the foot-note represents continuous inventive activity during more than a decade by which it was attempted to produce a successful machine for making wirebound boxes. But throughout that experimentation, these inventors persisted in the use of machines and a method which produced foldable relationships of box parts by a *cutting* operation (by the step-mitering machines). None of these inventors ever perceived the desirability of producing foldable relationships by assembling operations and then perpetuating those relationships by attaching the binding wires. The collective thought of these inventors never arrived at the ultimately successful idea of providing mechanical [fol. 557] contrivances for positioning in foldable relationship the preformed and predimensioned side material and cleats and then attaching the binding wires so as to render the box sections relatively foldable and to predetermine coordination of the box parts in the finished box.

44. On the contrary, all these prior inventors adhered to a box making practice which involved two distinct

---

* Knudtson & Uhri, No. 518,038, April 10, 1894.
Rosback, No. 608,796, August 9, 1898.
Uhri, No. 608,809, August 9, 1898.
Rosback, No. 608,917, August 9, 1898.
Rosback, No. 609,630, August 23, 1898.
Rosback, No. 614,348, November 15, 1898.
Rosback, No. 623,258, April 18, 1899.
Rosback, No. 625,958, May 30, 1899.
Rosback, No. 630,303, August 2, 1899.
Rosback, No. 636,068, October 31, 1899.
Flora, No. 775,622, November 22, 1904.

method steps and two distinct machines: first, the assembling of three rigid pieces of raw material, so to speak, namely, the long sheet of veneer for the box sides, and the two long strips of cleat material, these three things being secured together, with binding wire, to form a rigid structure; and, second, the cutting up of each cleat strip into four cleats, trimming the ends of a blank, and scoring the side sheets to produce the foldable blank. The making of the initial rigid blank was performed on one machine, the product of which was then taken to the second or step-mitering machine which subdivided the rigid blank into foldable parts.

45. A Rosback first step predetermined only a single dimension of the box, namely, the length of the box from end to end, i. e., the width of the preliminary rigid blank measured transversely of the cleats. When the rigid preliminary blank had been made upon the first machine, the cross-sectional shape and the width and the depth of the intended box depended wholly upon the adjustment and operation of the second or step-mitering machine which for the first time cut up and dimensioned the cleats and determined their relationships to each other and to the side sheets. According as this step-mitering machine was adjusted, any given rigid blank could have its cleat strips severed and dimensioned and its side sheets scored to make a box square or oblong in cross-section and otherwise varied within wide limits. And these characteristics inhered in the entire practice pursued by the Rosback series of inventors who did not conceive the better and simpler method and machine which were devised by Inwood and Lavenberg.

46. Mr. McElroy refers particularly to the Rosback patent No. 614,348, in which two endless chains are the primary means for propelling, through the stapling machine, the raw material pieces consisting of the long sheet of side material and the long cleat strips. The product of that machine was the preliminary rigid blank which required to be cut up on the step-mitering machine.

47. In this Rosback patent No. 614,348, the chains are shown in side elevation, partly in dotted lines, in Fig. 2, the chains being indicated by the letter F. The stapling

[fol. 558] mechanism is at the left of this figure. The upper run of the chain F is horizontal. On each run of the two chains is mounted a pusher F′ shown in dotted lines at the right of Fig. 2. The pushers F′ on the respective chains are abreast of each other as shown in the front view of the pushers in Rosback's Fig. 11, thus serving to push forward abreast of each other the two cleat strips for the rigid blank. The cleat strips rest upon elongated platforms B′ yieldingly supported on springs as indicated in Fig. 11, and are guided in their travel by the vertical walls or guideways B. An overhanging part s′ of the guideway projects above the side material y′. Each of the pushers F′, mounted on its chain F, has a horizontally extending cleat pusher and a vertically extending sheet pusher.

48. So far as concerns the feeding mechanism for driving the chains F and thereby feeding or transporting the three raw material parts for the rigid blank, it suffices to say that the chains are moved intermittently in alternation with the stapling operation.

49. It happens that there are two sets of pushers F upon the Rosback chains. But these two sets of pushers have no more relationship to each other than if they were upon different machines. When one set of pushers is operating, the other is wholly idle. The only purpose in having a second set of pushers is to have it presented, in the travel of the chains, in position to receive a new assembly of raw material parts, after preceding assembly has been sent through the machine by the first set of pushers. The second set is not in any degree essential to the operation of the machine, and could be omitted altogether without affecting the operation of the machine upon the blank materials propelled by the first set of pushers.

50. The conspicuously important point is that there is no co-action of co-operative relationship whatever between one pair of Rosback pushers and another pair; and each pair serves as a mere propelling or transporting contrivance which cannot and was not intended to perform any function whatever pertinent to the positioning of separate parts in co-operative foldable relationships.

51. A pair of Rosback pushers propel both side materials and the long cleat strips, and, in a certain sense, may be said to locate the rear edges of these raw material parts in part in relation to each other. But this has no bearing upon a foldable relationship, as for instance between any two preformed and separate cleats of a blank. Even at the rear end of the rigid blank, where [fol. 559] the pushers contact with the raw material pieces, the blank is trimmed off in the step-mitering machine to determine, for the first time, a new relationship of finished cleat ends and sheet edge, to which relationship the pushers on the blank had contributed nothing.

52. In the light of these clear teachings by the Rosback patents, I find no support for Mr. McElroy's suggestion that the cleat positioning blocks of the workholder patent in suit represent a mere duplication of the Rosback pushers. Rosback himself had duplicated his pushers by having two sets of pushers; but that mere duplication did not enable them to have the co-active relationship or to perform the functions of the blocks of the workholder patent. Duplication of pairs of pushers, as explicitly taught by Rosback, signified his recognition of the desirability of transporting two distince blanks independently of each other. But no Rosback or other patent manifests the slightest recognition that duplication of pushers could be made to produce co-operative foldable relationships between the parts of a single blank.

53. The Rosback pushers serve exclusively as propelling devices with no positioning functions. To enable them to perform positioning functions and to produce foldable relationships, they would have required not only to be modified in their mechanical relationships but also to be charged with the new function of positioning one cleat in relation to another alined cleat.

54. Of course, it is easy for either McElroy or myself, having first acquired familiarity with the Inwood and Lavenberg inventions of the patents in suit, to see how Inwood and Lavenberg could have multiplied the Rosback pushers and could have modified their mechanical relationships and imposed upon them new functions never perceived by Ros-

back; but this wisdom in retrospect has no bearing upon the novelty of the Inwood and Lavenberg machines in 1904. Mr. McElroy's present information as to suggested modifications of the Rosback machine is derived from the teachings of plaintiffs' patent in suit; it is impossible to find any foundation in the prior art itself.

55. Inwood and Lavenberg, having conceived the unique idea of an assembly of alined cleats in predetermined relationship, were confronted by a problem that was foreign to any that Rosback had ever dealt with. Theirs was not Rosback's propelling problem, but was generically a new problem in relative positioning and in perpetuating the relationship of parts so relatively positioned. Inwood and [fol. 560] Lavenberg's solution was embodied in alined positioning devices which were essentially interdependent in function, essentially co-operative, as distinguished from the Rosback devices in which the duplicated pairs of pushers had no co-operative relationship at all.

56. Even if Inwood and Lavenberg had made three additional sets of pushers, exactly reproducing those of Fig. 11 of the Rosback patent No. 614,348, and had secured those sets of pushers to the identical chains of that Rosback machine, but in co-operative relation with each other and with the already existing pushers on the chains, and had disposed the four sets so that they should position correctly the eight preformed cleats and the four preformed sheets for an Inwood and Lavenberg blank,—the resulting machine built up upon the basis of the Rosback mechanism would have involved a multiplicity of new mechanical relationships and new individual and conjoint functions, to produce new results, such as were never conceived, much less taught, by Rosback.

57. Before the Rosback machine could have been modified in the manner just described so as to enable it to make the Inwood and Lavenberg blank, someone first must have conceived the idea of mechanically positioning alined cleats in co-operative foldable relationship, an idea to which Rosback and his associates remained wholly blind through years of experimenting with the Rosback type of machine. Inwood and Lavenberg were the first to conceive the under-

lying idea referred to and they embodied it in the machines of the patents in suit.

58. In appraising the novelty of a patented mechanical invention, the inventive idea underlying a mechanical embodiment is, of course, the consideration of controlling importance. In the patents in suit the underlying concept is the mechanical positioning of cleats and sheets in cooperative foldable relationship so that the immediate product of the machine shall be the foldable blank having the relationships and co-ordination of its parts in the finished box definitely predetermined by the functioning of the machine. This subject-matter was wholly novel with Inwood and Lavenberg; it was never suggested in any of the Rosback series of patents. On the contrary, Rosback and his associates never progressed beyond the underlying idea of propellling the raw material strips through the blank machine to produce the rigid blank which had to be made foldable at a subsequent stage by means of a step-mitering machine.

59. I see no possible basis for the contention that the teaching of the Rosback patent No. 614,348 (mainly relied [fol. 561] upon by Mr. McElroy) contributed anything toward the invention of the Inwood and Lavenberg machines.

60. Furthermore, I can find no support for Mr. McElroy's assumption that the Inwood and Lavenberg machines were obvious developments of the Rosback machine. On the contrary, the evidence that Rosback and his associates, throughout more than a decade, persisted in their attempts to use machines for mere pushers for raw material strips, establishes beyond any doubt, in my estimation, that it was not obvious for them to modify the mechanical relationships and the functions of the Rosback machine so that it might do the novel work of the Inwood and Lavenberg machine. Otherwise, Rosback and his associates would have adopted the alleged obvious expedients and would have succeeded in devoping successful machines long before Inwood and Lavenberg entered the filed.

61. A brief review of the various machines for making the Rosback type of box is worth while.

62. On February 10, 1893, the application was filed which resulted in the Knudtson & Uhri patent No. 518,038, dated April 10th, 1894. In this patent (Figs. 19 and 20) the long cleat strips Z^2 rested in stationary guides with their advanced ends positioned against removable gauges V^7. Side material, superposed upon the cleats, has its advanced edge positioned against the same removable gauge V^7. The cleat strips and side material were simply the raw material parts for the rigid blank as disclosed in all this series of patents relating to the Rosback box.

63. For the purpose of feeding these raw material parts through the machine, spears T^8 were driven through the side material Z^1 and into the cleat strips Z^2 to hold them temporarily together; the spears T^8 being mounted on a movable carriage, served to feed the blank parts when the carriage was moving.

64. Evidently, the Knudtson & Uhri idea involved no problem of positioning parts in co-operative foldable relationship and their machine had no capacity for performing any such function.

65. Rosback No. 608,796, August 9th, 1898, shows the machine for making the rigid blank of the typical raw material parts.

66. The blank feeding devices which alone are pertinent, are best shown in Fig. 29, a cross-section, and Fig. 33, a side elevation showing a fragment of a chain passing around one of its sprocket wheels.

67. Each feed chain has "stops or cleat and sheet engag- [fol. 562] ing projections H^6." Such stops are provided on the chains at convenient intervals "in the present machine nine feet apart" (page 4, line 78). These stops H^6 are merely pushers similar to those shown in Rosback 614,348; each pair of pushers acts alone and has no co-action at all with the other pairs.

68. Rosback No. 608,917, August 9th, 1898: The machine of this patent is not a blank machine but deals with the third stage in the making of the Rosback type of box. After the preliminary rigid blank has been made upon the blank machine, and has then been step-mitered upon a second

machine, the blank is finally folded around ends which are secured to the cleats on a machine of this patent No. 608,917. The purpose of the machine is well illustrated in Figs. 34, 35 and 37 (sheet 16 of the drawings).

69. Rosback No. 609,630, August 23, 1898, shows one of the step-mitering machines already referred to. This is the machine which, by a *cutting* operation, severs the raw material cleat strips of the rigid blank and trims the ends of the blanks and thereby for the first time puts the foldable relationships into the blank as distinguished from the Inwood and Lavenberg idea of producing foldable relationship of preformed and detached parts by an assembling and mechanical positioning operation.

70. Rosback No. 614,348, November 15, 1898, is the patent largely relied upon by Mr. McElroy already described as having the two independent sets of pushers.

71. Rosback No. 625,958, May 30, 1899: This shows an interesting culmination of Rosback's thought upon the matter of propelling the raw material cleat strips and side sheets through a stapling machine. Beginning with Knudtson & Uhri in 1893 and through all of the subsequent development represented by these patents up to June 18, 1898, this series of inventors had disclosed a mechanical device of some kind for preliminarily locating the long side sheet and the long cleat strips so that they should travel together through the machine. But in this ultimate development in the patent of May 30, 1899, Rosback *entirely discards the mechanical locating of the side material on the cleats.*

72. In this patent No. 625,958 (page 1, line 20), Rosback says:

"The object of my invention is to provide an *improved* device for feeding the wooden sheets and cleats in their proper relative positions thereon and delivering them to a suitable machine for performing the stapling operation [fol. 563] preparatory to the further operation of step-mitering the cleats, thereby to finish the blank and adapt it to be folded into box form."

73. And this *improved* device is arranged for feeding cleat strips X, substantially longer than the side material

Y, the cleat strips being transported by pushers g^2, but the side material Y having its rear end spaced from the rear ends of the cleat strips and remote from the pushers g^2. The side material is caused to travel with the cleat strips by being pressed down upon them to produce a frictional engagement to carry them together.

74. This arrangement, arrived at after Rosback had had years of experience, emphasizes the fact that the relative positioning even of side sheets on cleat strips in any accurate relationship was no part of his concept or disclosure, to say nothing of his having failed entirely to conceive or suggest the necessarily accurate mechanical positioning of preformed cleats in co-operative foldable relationship.

75. Although Mr. McElroy does not refer to it, I invite attention to Flora patent No. 775,622, applied for April 7, 1904, and granted November 22, 1904. This patent was applied for shortly preceding the Inwood and Lavenberg inventions and the Flora machine represents the highest development, or at least the ultimate development in point of time after more than ten years of experimentation, of machines for making the Rosback type of rigid blank.

76. If the earlier work of Knudtson & Uhri (beginning not later than 1893) and of Rosback had taught the employment of positioning devices comparable to those of the Inwood & Lavenberg machine, those teachings would certainly have been manifest in the ultimate development represented by this Flora patent. But Flora discloses no positioning devices whatever of any character for locating the side sheet with reference to the cleat strips. That positioning is done by the operator by simply pushing the ends of the cleats and the edge of the side material into the space between upper and lower feed rolls which grip the materials and feed them along. These feed rolls are indicated in Fig. 3, the lower rolls 27 being shown beneath, and the upper feed rolls being shown in the same vertical plane above.

77. The Flora specification (page 4, line 21) says:

"The ends of the cleats and forward edge of the sheet-section should be pressed into the bite of the upper and [fol. 564] lower feed-rolls 27. This turning of the shafts

feeds the cleats and sheet along beneath the staple forming and driving devices 35."

78. Thus the eventual development of all the teachings of Knudtson, Uhri, Rosback and Flora resulted in wholly discarding any sort of positioning device, or pushing device for that matter, and the reason for this is not difficult to see. The sole necessity of the Rosback rigid blank machine was to propel through the stapling machine three raw material parts which were rigid and involved no cooperative foldable relationships. A rough assembly of these three parts sufficed for all purposes in this machine. It was perhaps a meritorious simplification of the Rosback type of machine when Flora finally discarded all positioning devices and left it to the operator to insert the materials and adjust them crudely to each other by hand.

79. It appears, therefore, that the whole trend of the Rosback development was utterly divergent from the fundamental Inwood and Lavenberg concepts of the machine patents in suit.

The Fuller Patents No. 690,416, January 7, 1902, No. 694,467, March 4, 1902

80. These patents, according to Mr. McElroy, are the second-best, after the Rosback patents, of the prior art approaches toward the machine patents in suit. Both these patents, of the same inventor, show machines for making basket tops "to be used with what is commonly known as the 'Climax' fruit basket" (694,467, page 1, line 21), this being the usual fragile basket for grapes and other small fruits. The tops for baskets of this type are simply thin closures to keep the small fruits from spilling out and they are open, as being made of spaced slats, to provide ventilation. The tops are not required to have any substantial strength, and they enter little or none in the structural strength of the basket.

81. The earliest Fuller patent disclosed a rigid carriage having wheels and a track to guide it through a nailing machine, the carriage being equipped with devices for positioning two curved wooden end segments and three side

slats for the basket top. These five parts were *rigidly* united in the machine by nailing so that the product of the machine is a rigid structure. Mr. McElroy advances the theory that the curved end segments P are cleats in the sense in which the term is used in the Inwood and Lavenberg patents. This is not at all true, because Inwood and Lavenberg's cleats in the finished box embrace necessarily a plurality of cleats predisposed for a definite interrelation and co-operation, whereas in the Fuller patent the two *rigidly connected* curved end segments of the basket top are the only things of the sort in the structure and they have no co-operative relation with any thing of a similar nature. Neither alone nor by co-operation with any other part do they contribute to the strength of the structure.

[fol. 565]

82. But even if there were some analogy between one of Fuller's curved end segments P and an Inwood and Lavenberg cleat, there is no disclosure in the Fuller patent of means for relating one end segment P with another in such manner as to predetermine foldable relations, or for wiring any parts together. Each carriage of the Fuller patent holds parts which are to be rigidly united. Nothing akin to a foldable relationship is determined by the carriage. The machine, apart from the carriage, is merely a nailing apparatus, lacking any means, or purpose for that matter, for the feeding and stapling of wires.

83. Since a feature of the Inwood and Lavenberg machine is the relative positioning of alined cleats to predetermine their relationship in a finished box, when they are wired together and folded, it is evidence that the Fuller patent discloses nothing pertinent.

84. The later Fuller patent adds nothing to the disclosure of the first, except that essentially the same positioning devices for holding together the curved end segments and slats of the basket top are articulated and mounted upon an endless chain for carrying a succession of groups of basket top parts instead of having the positioning devices for each group mounted upon an individual and separate carriage.

85. Fig. 5 of this later Fuller patent shows the end segments of the basket top provided with depending nails p by which the top is secured to the basket, this being the

only means of attachment, thus evidencing the independent and accessory character of these individual basket tops as related to the structure of a finished container, and also indicating the lack of any material co-operation as regards strength, between the basket top and the remainder of the receptacle.

86. This later Fuller patent is irrelevant for the same reasons stated in connection with the earlier patent.

[fol. 566] The Healy Patent No. 768,123, August 23, 1904

87. Mr. McElroy refers to this Healy patent as supporting his theory (X Q. 334):

"that any carpenter being presented with the job of manufacturing these Healy boxes in quantity, would, as a matter of course, make up a holder for the cleats."

88. But he admits (X Q. 36) that the Healy patent shows no positioning or other mechanism whatever; therefore that patent can have no bearing upon the novelty of the machine patents in suit. Various special problems would be involved in developing a machine that would manufacture the Healy box, problems quite unlike those which confronted Inwood and Lavenberg. The Healy patent shows the double pairs of cleats 11, 12, on the first and third sections of the blank, and if it were desired to assemble and secure these upon any sort of machine, some special equipment would have to be devised for them. Each metal strap used by Healy for strapping his box is provided with a special fastener at its end as illustrated in Figs. 3 and 5. The strap is folded into what Healy calls "a box-loop"; and these are so essentially a part of Healy's invention as to be recited in all three of Healy's claims. For instance, claim 1 recites—

"one end of each strap being bent transversely and folded around to form box loops of a width to allow the other ends of the straps to be passed through."

Similar expressions occur in the other two claims. Mr. McElroy neglects to suggest any way that such straps and box loops could be handled mechanically; and I am not surprised because it would be a feat of special designing to produce a machine that would do this satisfactorily.

89. Healy says that the straps 7, 8, having the box loops at their ends, are secured to the box sections "by nails, rivets, prongs, or screws, as shown at 9" (specification, page 1, line 36 et seq.). As indicated in Fig. 1, the straps are secured to the box sides by one set of nails, screws or the like, while as indicated in Fig. 2, cleats 11 are secured to the box sides by another set of nails, screws or the like. If it were attempted to carry out Healy's idea of a machine, it would apparently require the provision of two sets of [fol. 567] nail- or screw-driving mechanisms operating in opposite directions to attach respectively the straps and cleats 11.

90. Everything considered, I have no hesitation in asserting that anybody who could develop a workholder or a blank machine upon which to make Healy's box, would be obliged to exercise invention. The difficulties would certainly be insoluble by a mere mechanic. And he would receive no assistance from the Healy patent as to any means of positioning the double cleats or manipulating the straps with their box loops.

91. It seems evident to me that Healy intended to make his box by hand, possibly with the assistance of conventional nail- or screw-driving mechanisms; and this is consistent with the fact that the object of Healy's invention was to produce a folding box susceptible of reuse, as by being loaded and shipped, then knocked down and unfolded into the flat for return to the original user, and again used by him. The provisions of the readily separable box loop attachment suited this purpose of reuse. Healy was not confronted by the problem of making a continuous succession of cheap, light boxes intended to be used and then thrown away as was the case with the Inwood and Lavenberg box.

92. It remains that Mr. McElroy could not point to any mechanical means in the prior art which would serve for assembling the Healy box (X Q. 37), and his supposition that a skilled mechanic could have done so is based upon a mere retrospective conjecture in the light of the patents in suit.

93. Summarizing with reference to the art prior to the machine patents in suit, it is clear that it wholly fails to

FIG. 1.

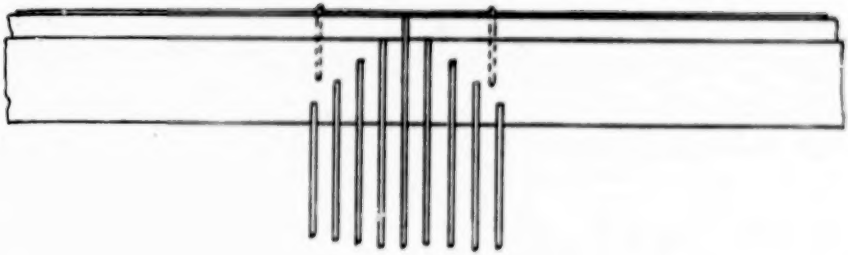
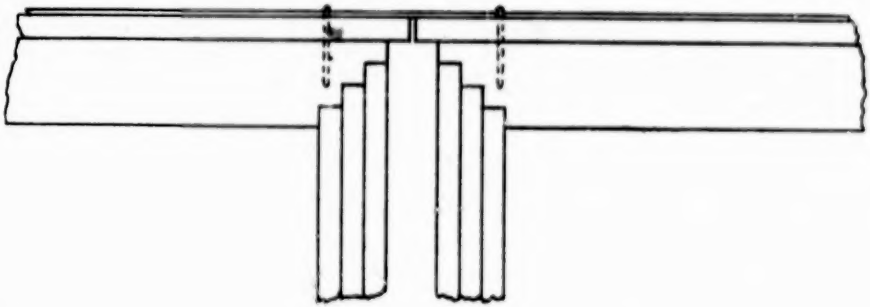


FIG. 2.



PLAINTIFFS EXHIBIT - BROWNE'S SKETCH
OF
MODIFIED ROSBACK METHOD

PLAINTIFFS' EXHIBIT NO. 25.

disclose the fundamentally important concept of mechanical devices for positioning preformed cleats and sheets in co-operative foldable relationship preparatory to the perpetuation of those relationships by the attachment of binding wires.

94. That this concept was novel in the estimation of the Patent Office, appears by the terms of claims allowed in the machine patents in suit. For instance, the work-holder patent contains the following claim:

"34. In a work-controlling means for use in assembling a sectional box blank, a plurality of means for positioning respective box sections, the said means being relatively constructed and arranged to position their respective box sections in co-operative foldable relationship."

[fol. 568] 95. The blank machine patent contains the following claim:

"36. A machine for making box blanks comprising, in combination, work-controlling means for positioning a plurality of box sections in co-operative foldable relationship; and mechanism for foldably connecting said sections."

96. The Rosback patent No. 608,796 and the Fuller patent No. 694,467 were before the Patent Office, being cited in the file-wrapper of the workholder patent (see official letter of April 15, 1912), but nevertheless, the Patent Office perceived in the workholder invention the novelty expressed in the claims just quoted.

(Here follows Plaintiffs' Exhibit No. 25, side folio 568½)

The Method Patent in Suit, Inwood & Lavenberg No. 1,128,252, Dated February 9, 1915, a Division from an Original Application Filed Oct. 4, 1904

97. Although Inwood and Lavenberg might have adopted practices of the prior art, somewhat modified, in order to produce their newly invented flexible box,—they rejected the teachings of the prior art and devised an entirely new method which is importantly different from any previously disclosed.

98. Mr. McElroy himself described two modifications of prior art methods by which the Inwood and Lavenberg box might have been made, if they had chosen to adopt the current practices in the prior art instead of blazing a new trail. In his direct testimony, Mr. McElroy says:

"If in Rosback the cut made by the saw were to extend clear through the veneer, and if the cleats were set back from the edge at both ends, the two patents (Rosback 623,258, and the Inwood and Lavenberg reissued patent) would show the same blank, *but not the same method.*"

What Mr. McElroy meant appears by reference to the Rosback patent 623,258, Figs 36 and 37. I produce a sketch marked "Plaintiffs' Exhibit, Browne's Sketch of Modified Rosback Method," which illustrates the modification of the Rosback apparatus evidently referred to by Mr. McElroy. My sketch comprises two figures, the first of which should be compared with Fig. 36, and the second with Fig. 37, of the Rosback patent 623,258. Also the cleats and sheets as cut in Fig. 2 of my sketch should be compared with Fig. 3, for example, of the Inwood and Lavenberg reissued pat- [fol. 569] ent when it will be evident that the relationships of the sheet edges and cleat ends are identical in the two instances.

99. Fig. 36 of the Rosback patent 623,258 and Fig. 1 of my sketch, each shows a series of circular saws (see also Rosback's Fig. 16). These saws are mounted upon a common hub. If Rosback's middle saw, having the greatest diameter in the group, were replaced by an exactly similar saw having its diameter increased approximately one-sixteenth of an inch (as in my own Fig. 1), it would cut completely through the veneer sheet leaving two separate sheet edges spaced apart as indicated in the Inwood and Lavenberg reissued patent. Then the two neighboring saws would need be of equal diameter and the same diameter as that of the saw m^3 in Rosback's Fig. 36, and as indicated in my Fig. 1. The other saws would be disposed as indicated in my Fig. 1, including one saw additional to the number used by Rosback. That is to say, nine saws as indicated in my Fig. 1 would be required to be used instead of eight saws which answer Rosback's specific purpose; but the

principle of operation involved would remain exactly the same.

100. Referring to Rosback's Fig. 37 and my Fig. 2, the cutters there indicated in edge elevation are shown in side elevation in Rosback's Fig. 18. No change from Rosback would need to be made in these cutters except that the middle one, the one of greatest diameter, could be omitted altogether, the remaining groups being spaced apart in order to complete the cutting of the cleat ends so as to produce exactly the relationship shown in the Inwood and Lavenberg reissued patent Fig. 3.

101. I have been informed, for instance by the testimony of several witnesses in the litigation against the Chicago Mill and Lumber Company who had been familiar with the attempts to commercialize the Rosback box, that Inwood and Lavenberg themselves had been working for some time with the Rosback box, before they invented the new box of their reissued patent. Under those circumstances, it would seem to me to have been the natural thing for them to do, to modify the Rosback step-mitering machine in the particulars I have just described and as suggested by Mr. McElroy, in order to make the new Inwood and Lavenberg box. I agree with Mr. McElroy (Defendants' Record in Gibbons Box Company suit, X Q. 19) that it would have been within the skill of the box mechanic to have made the above suggested modifications in the Rosback step-mitering machine and to have produced the Inwood and Lavenberg box in that manner, once the Inwood and Lavenberg box had been invented.

[fol. 570]

102. Or, instead of modifying the Rosback practices as already suggested, Inwood and Lavenberg might have adopted some other modification (which might or might not have been inventive). For example, Mr. McElroy suggests (X Qs. 15 and 16) that the Inwood and Lavenberg box might be made by starting with separate side sheets preformed to proper dimensions; using with those separate side sheets, the typical Rosback cleat strips each long enough for all four sides of the box; putting the separate sides and long cleat strips through the typical Rosback blank machine and wiring them to form the preliminary rigid blank; and then operating upon the rigid blank by

exactly the apparatus shown in my sketch of the modified Rosback method, except that the middle saw, of greatest diameter, in Fig. 1, would be unnecessary and could be omitted. The result would be precisely the Inwood and Lavenberg blank of the reissued patent.

103. If Inwood and Lavenberg had chosen to adopt one of these prior art expedients which were ready at hand once they had invented their new box, they could have employed the general characteristics of both method and apparatus with which they were already familiar, and with but slight modification of details. Instead, however, they devised an entirely new procedure and a new form of apparatus for carrying it out.

104. Although they had been schooled (as I am informed) in the Rosback practices employing the long cleat strips and the step-mitering of the preliminary rigid blank,—Inwood and Lavenberg rejected the idea of the two long cleat strips and devised the eight individual preformed cleats. Similarly they rejected the idea of the size material of indeterminate width (to be trimmed to size and scored later) and devised the four individual preformed side sheets.

105. Starting with these importantly different elements, Inwood and Lavenberg were confronted by the problem of somehow relatively positioning and wiring the twelve separate parts so that they should be appropriately disposed in the finished box.

106. The Rosback practices had taught the idea of producing foldable relationships by the operation of *cutting* the preliminary rigid blank. Inwood and Lavenberg rejected that teaching and solved their problem by relatively positioning and wiring together entirely separate parts in such manner that their intended co-operation in the finished [fol. 571] box should be ensured. In brief, Rosback taught the production of foldable relationships by *cutting*. Inwood and Lavenberg produced a flexible box by an *assembling* and wiring together of *separate elements*.

107. Within this newly devised field, producing the flexible box by the *assembling* and wiring of *separate parts* (instead of by *cutting* rigidly related parts)—once the generic plan was made known, there were several specifically

different methods which could have been followed. The specific method which Inwood and Lavenberg selected for illustrative disclosure in their application for the method patent in suit, involved the assembling of the separate parts "in the flat," so to speak, *i. e.*, with the four box sections lying in the same horizontal plane. This was one convenient species of the generic Inwood and Lavenberg method.

108. The specific Inwood and Lavenberg method of the method patent in suit, involves the assembly in a horizontal plane of four separate side sheets with cleats placed in two lines at the respective ends of the side sheets. Each sheet must be so positioned with reference to all of the other sheets so at to take up its proper relationship with them when the blank is wired and folded into box form. The cleats must be positioned in relation to each other so as to take up their proper relationships when the blank is folded. The cleats and sheets must be so related to each other that they will assume the proper relationships when the blank is folded.

109. Obviously it does not suffice for one sheet to be positioned simply with reference to a next adjacent sheet. It is just as essential that alternate sheets pertaining to non-adjacent sides of the box be accurately positioned in relation to each other and be spaced apart appropriately to an intervening side of the box; otherwise the two non-adjacent sheets will not incorporate correctly into the finished box. It does not suffice for one cleat to be positioned with reference only to an adjoining cleat. Equally each cleat must be correctly positioned with reference to each other cleat and each side sheet in the entire box, else the parts collectively will never enter into their necessary co-operative relationships in the finished box.

110. In other words, the problem solved by the Inwood and Lavenberg method invention was the assembly and wiring together of eight cleats and four side sheets, together with two box ends, fourteen parts in all, each of which in the finished box must bear a precise functional and struc- [fol. 572] tural relation to each and all of the other thirteen parts.

111. When all twelve of the blank parts are assembled in the flat as in the illustrative method of the patent in suit, the operation of wiring so conjoins the twelve parts that their inevitably fold into a box in which each part bears its proper functional and structural relationship to each other part; for instance, the cleats upon the section intended for the top of the box are definitely related to the cleats intended for the bottom of the box; when wired together these will fold inevitably into parallel planes and in proper location for the top and bottom of the box.

112. And in my opinion the clearly novelty of the Inwood and Lavenberg method invention resides in just this: That, during the course of the method, twelve separate and independent cleats and side sheets are wired together in such relationships that their functional and structural co-operation in the finished wire-encircled, flexible box are definitely and accurately predetermined—regardless of the folding or unfolding of the blank.

113. To express it somewhat differently, one aspect of the novelty of the Inwood and Lavenberg method is that the twelve separate and independent cleats and sheets are so related and wired together as to comprise four separate, individually rigid sections predeterminately positioned each in relation to all of the others so that the functional and structural co-operation of each section with all the rest in the finished box is definitely predetermined.

114. The method is characterized, in one very advantageous phase, by commencing with the fourteen preformed elements, including the two ends. The cleats, being in relatively small pieces, are economical as compared with the long cleat lengths necessary for the Rosback method. Similarly, the side sheets are formed in relatively small individual pieces instead of the larger pieces which are preferable for use in the Rosback practice. But the employment of these fourteen separate pieces presented to Inwood and Lavenberg the problem of assembly and wiring of sheets and cleats which had never been solved, nor even confronted, in the prior art.

115. I shall discuss the prior patents referred to by Mr. McElroy with a view primarily to determine whether the

procedure of the Inwood and Lavenberg method is to be found in the prior art.

116. The prior art patents referred to by Mr. McElroy may be conveniently classified as follows:

117. There are two patents on machines for making in- [fol. 573] dividual basket tops which are rigid, independent of each other, and employ no wires nor foldable relationships, namely:

Fuller, 690,416, January 7, 1902.
Fuller, 694,467, March 4, 1902.

118. There are two patents on knock-down or folding crates which employ no wires and are otherwise unimportant, namely:

Walker, 763,579, June 28, 1904.
Walker, 767,613, August 16, 1904.

119. There are three patents on boxes which Mr. McElroy says would be made "obviously" by methods similar to the Inwood and Lavenberg method namely:

Hamilton, 373,828, November 29, 1887.
Howenstine, 453,479, June 2, 1891.
Healy, 768,123, August 23, 1904.

120. There are five patents relating to the wire and slatted fabric type of container, namely:

Greenstreet, 579,574, March 30, 1897.
Greenstreet, 652,357, June 26, 1900.
Maltby, 666,872, January 29, 1901.
Greenstreet, 722,438, March 10, 1903.
Lipps and Springer, 801,998, October 17, 1905.

121. There are six patents relating to the making of the Rosback box, namely:

Knudtson and Uhri, 518,038, April 10, 1894.
Rosback, 608,796, August 9, 1898.
Uhri, 608,809, August 9, 1898.
Rosback, 608,917, August 9, 1898.
Rosback, 614,348, November 15, 1898.
Rosback, 625,958, May 30, 1899.

122. I shall discuss the patents in the foregoing classes in the sequence indicated.

123. Before doing so, however, I call attention to the two distinct classes of boxes in the prior art involving differences of method, which demand consideration. I refer to the class of nailed boxes whether or not reinforced by some sort of metal binding, on the one hand, and to the broad class of wirebound boxes of which the Rosback box is the only example, on the other hand. The differences between all types of nailed boxes and the one prior art example of a wirebound box are fundamental.

124. In the light of the history of the Rosback box and the [fol. 574] ten years of failure in the attempts to make it commercially, it appears that there was no practical wirebound box in the prior art. Nevertheless, the efforts to develop the Rosback box represent a move in the right direction with the idea of using a completely encircling, reinforcing wire, in co-ordination with thin veneer side sheets and cleats such that the strength of the wire would be to some extent substituted, so to speak, for the excessive thickness of wooden sides which is essential to the nailed type of box. Unfortunately, the series of inventors who worked with the Rosback idea, never succeeded in reducing the fundamental wirebound box concept to commercially practical form. It remained for Inwood and Lavenberg to solve the problem and to produce, as Judge Sanborn said in the Chicago Mill & Lumber Company litigation (238 Fed. 929) a box which is "flexible, elastic, strong, light, has proved very successful, and was the first of its kind." The distinguishing difference between this Inwood and Lavenberg box and all types of nailed boxes was well elucidated by Judge Sanborn in the same opinion, as follows:

"The ultimate strength of the Inwood & Lavenberg box is dependent upon the wires. Owing to the tensioning of the wires at the corners of the box, this strength is utilized to its full capacity. This will be readily understood by reference to an ordinary nailed box. When such a box is subjected to diagonal trains, the tendency is to distort and disrupt the box, either by pulling out the nails or by disrupting the box material at the nail holes. This is avoided in the

Inwood & Lavenberg box, because the wires themselves withstand the strains, and the box can be distorted to the breaking point without disrupting the union between the side material and the cleats, because the side sections can slip on each other, leaving the strains to be borne by the wires. Consequently the box can be materially distorted, and nevertheless, after the distorting strain has ceased, the box can resume its original shape and still be an efficient carrier for its contents. Owing to the tension of the wires at the corners, the box is stiffened in the first instance, so that ordinary strains will be withstood, without any distortion of the box; and then, if the strain is increased sufficiently to distort the box, the wires will hold the box together, and the side sections will slide without disrupting."

125. The method of making the Inwood and Lavenberg [fol. 575] box, according to the method patent in suit, involves such co-ordination of cleats at each end and such an encircling connection of the cleats to each other by the flexible wires, that the four-sided frame formed by the cleats is a flexible frame which can be somewhat twisted and bent under diagonal distorting strains without material rupture of the wooden parts. In other words, each cleat functions as a structural part of its side sheet during diagonal strains, rather than as a part of the rigid end.

126. In the nailed type of box, however, the side sheets are attached to substantially rigid ends. Diagonal distortion tears the sides away from the ends "either by pulling out the nails or by disrupting the box material at the nail holes," as pointed out by Judge Sanborn. And this defect in the box structure is due, of course, to the method of assembling, organizing and attaching the side elements and end elements of the box.

127. The difference may be tersely stated thus: The wirebound box produced by the Inwood and Lavenberg method depends for its strength primarily upon the tensile strength of completely encircling wire bindings, and only subordinately upon the strength of wood; while the nailed box depends primarily if not entirely upon the security of attachment of wood to wood by nails or the like.

128. It is precisely this underlying difference which permits the Inwood and Lavenberg box to be made of very

thin veneer side sheets with strikingly important results of economy in raw material costs, and freight and handling expenses and the like, and generally in the conservation of lumber; while a nailed box, for carrying the same load, requires wood twice as thick or more.

129. Various efforts were made in the prior art to reinforce boxes of the nailed type by bands, straps or the like, and undoubtedly these reinforcements contributed some strength against bulging strains. But none sufficed to avoid the inevitable necessity that the box rely upon the security of attachment of wood to wood as its main source of strength. None sufficed to transmute the nailed box relying primarily upon the strength of wood, into a wirebound box, relying primarily upon the strength of wire.

130. These generalizations on the prior art forecast the differences in method involved in making the nailed box and the wirebound box, and indicate that the prior art patents relating to nailed boxes are of little or no relevancy.

[fol. 576] The Basket-Top Machine Patents.

131. These are the two Fuller Patents, 690,416, January 7, 1902, and 694,467, March 4, 1902:

132. Each of these patents discloses a machine for making a rigid basket-top, as a separate unit, which is shown in Fig. 4 of the earlier and in Fig. 5 of the later patent. Each top consists of two curved end pieces connected by three slats. The curved end pieces are intended to suit the conformation of such a receptacle as the ordinary grape basket. Each patent shows workholding means for holding the five different elements of the basket-top in the rigid relationships in which they are to be secured together, and for nailing them permanently in those rigid relationships. For instance, the earlier patent No. 690,416 in Fig. 2 shows a workholding carrier mounted on wheels to travel on a track, the carrier being equipped with lugs, M, N, M at each end for holding the end pieces of the basket-top, and with other lugs, L, O and O' for holding the slats.

133. The later Fuller patent No. 694,467 shows simply an improvement of the mechanism of the earlier, substituting an endless chain for the wheeled carrier, but using practically the same work-positioning elements on the endless chain as were employed on the wheeled carrier.

134. Each wheeled carrier in the earlier patent was constructed to position the five parts for a single basket-top, each basket-top being assembled and nailed as a separate article wholly independently of any other article produced by the machine. The same is true of the later endless chain machine of the second patent in which the group of positioning devices for one basket-top has no functional relation at all to the similar group for another basket-top and the product of the machine is simply a succession of separate and independent individually rigid basket-tops.

135. Evidently such method or procedure as is disclosed in these Fuller patents pertains only to the assembly of parts which are to be rigidly united to each other; there is no suggestion of assembling and maintaining parts in a foldable relationship.

136. The Fuller method employs no wires or flexible connections of any kind. There is no relative positioning of cleats or other parts to be flexibly connected and then folded into predetermined relationships in a finished box.

[fol. 577] The Patents on the Unwired Knockdown Crates

137. These are Walker, 763,579, dated June 28, 1904, and 767,613, dated August 16, 1904:

138. The earlier patent, Fig. 1, shows a crate having no wires at all. The lack of wire or any encircling reinforcement characterizes the entire disclosure of the patent.

139. Fig. 2 shows the box knocked down and comprising five sections, the two end sections being uncleated and constituting, when the box is folded, mating lids which fold toward each other to close the box as indicated in Fig. 1. These lid sections 19 and 20 of Fig. 2 are attached by strap hinges 28 (Fig. 1) to neighboring sections of the box and those lid sections are never cleated at any stage in the Walker method. The specification says (page 2, line 30):

"The pieces 19 and 20, constituting the lid of the crate, are held closed by means of the staples 29, which are driven through said pieces and into the ends and the central partition of the crate."

This is illustrated in Fig. 5, the staple 29 being shown as straddling the interval between one top section and the next and entering the reinforcing-strip at the box end. Thus the lid sections 19 and 20 are held in place only by the staples 29 at their adjacent edges and the hinges 26, 28. This fragile attachment of the lid sections undoubtedly suffices for Walker's purposes since, as he states in the specification (page 1, line 11) his invention "relates to improvements in folding crates for berry-boxes and the like" in which the cover may well be simply a closure not required to contribute, uniformly with the other parts, to the strength of the container as a whole. This is a type of box in which the lid is desired to be readily opened to permit inspection of the contents and for display. The only needed strength is in the sides, bottoms and ends. Berry-boxes are always transported right side up so that the contents will not spill from their individual small boxes, hence there is no occasion for that uniformity in strength throughout all parts of the structure which characterizes the Inwood and Lavenberg box.

140. Insofar as this Walker berry-box suggests flexibly relating one cleat to another, the suggestion is merely that of holding two parts together to have a hinge applied to them just as one would apply a hinge to the lid on the rear side of a trunk. Walker makes no suggestion of a pro- [fol. 578] cedure in which a multiplicity of parts are assembled in co-operative relation and wired together by a wire binding to form four uniform cleated wired sections, all encircled in the finished box by the continuous wire binding, and each co-operating with all the others to produce a uniformly strong but flexible whole. Of course, since Walker's method employs only isolated hinge straps, there is no suggestion of a continuously encircling wire and hence no disclosure of the method step of completing the continuity of wire so fundamentally important in the Inwood and Lavenberg procedure.

141. The second Walker patent No. 767,613 is even less pertinent. Fig. 6 shows the five-sectioned box knocked down which comprises "five swingingly or hinge connected sections, c, c', c'', c''', and c'''' (specification page 1, line 90). "Thus constructed, the inclosing or enveloping member C is provided with a plurality of tongues or ridges c', these

tongues or ridges being divided up into hinge-connected sections corresponding in length to the different sections of which the member C is composed. The flat strips and the narrow strips of which the member C is composed can be secured together in any suitable manner; but as a matter of further and special improvement they are secured together by staples, and the junctions between the sections are provided with staples c^6 (see Fig. 3), these staples c^6 spanning the joints, and thus serving as hinges."

142. Figs. 4 and 5 show the "berry-boxes E of any suitable form" which are the intended contents of Walker's "Knockdown Fruit Package." Such a light load as this can doubtless be carried safely in the fragile construction disclosed by Walker including the staple hinges.

143. Like the earlier Walker patent, this box has the two lid sections with their adjacent edges connected simply by staples (see Fig. 3). The "tongues or ridges c^5" are not "cleats" comparable either structurally or functionally with the cleats of Inwood and Lavenberg. These "tongues or ridges c^5" are literally "tongues" forming a tongue and groove joint between the "inclosing or enveloping member" the parts of which are flexibly stapled together, with the end of pieces a, a^1.

144. Of course this Walker package is not a wirebound box in any sense. Walker's procedure is characterized simply by hinging or stapling one part to another to make them foldable, just as a trunk is hinged to its rear side. The Inwood and Lavenberg step of completing the con- [fol. 579] tinuity of the wire binding is altogether lacking.

145. It is noteworthy that the earlier Walker application was filed October 20, 1903, nearly ten years after Knudtson and Uhri (in patent No. 518,038) had contributed to the art the idea of the continuously encircling wire binder. If the advantages to be gained by binding this encircling wire with cleated side sections to form a flexible box, according to the Inwood and Lavenberg method, had been an obvious development, Walker could have availed of these teachings, particularly in view of the work and the disclosures of Knudtson, Uhri and Rosback which preceded Walker's applications. As a matter of fact, however,

Walker's problems were concerned solely with light berry containers and the like; he was not even seeking a method to produce a uniformly strong and flexible box; and his disclosures add nothing whatever to the disclosures of Knudtson, Uhri, Rosback and Flora which would assist in any degree in the development of the Inwood and Lavenberg method.

146. It is further to be noted that Walker's fragile berry-baskets with their light strap hinges and staple hinges and their admissibly un-uniform strength and stability are not nearly so pertinent in substance to the problem solved by Inwood and Lavenberg as the much sturdier and the uniformly strong box of the Archer British patent No. 4,793 of 1889 which was discussed by me in the earlier litigation against the Chicago Mill and Lumber Company in which Judge Sanborn decided that the Inwood and Lavenberg box was "the first of its kind."

Patents on Boxes Which Mr. McElroy Asserts are "Obviously" Made by the Inwood and Lavenberg Method

147. These are:

Hamilton, 373,828, November 29, 1887.
Howenstine, 453,479, June 2, 1891.
Healy, 768,123, August 23, 1904.

148. Hamilton, 373,828, November 29, 1887: Hamilton's teachings, for what they were worth, stood in the art for about *seventeen years*, during the latter decade of which Knudtson, Uhri, and Rosback were at work trying to develop the Rosback type of box. But the combined teachings of Hamilton and these others at no time sufficed to [fol. 580] suggest any part of the Inwood and Lavenberg inventions.

149. Hamilton's procedure starts with the succession of slats which he engages with interwoven wires to form a flexible fabric.

150. This fabric itself would doubtless be prohibitively deficient if attempted to be used in an Inwood and Lavenberg structure, unless it were used, with its wires, merely as a substitute for the unwired veneer employed in the Inwood and Lavenberg practice.

151. For instance Greenstreet, in his patent 547,486, which followed Hamilton by approximately five years, points out the inherent deficiencies in the Hamilton type of fabric in the following words (page 2, line 17, et seq.):

"I am aware that packages have been made of a fabric formed of wooden slats woven between strands of wire. The woven nature of the fabric in which the wires are interlaced or woven back and forth from the outer face of one of the slats to the inner face of the next, and so on, makes the fabric elastic in its nature and gives a package constructed from such material the power to stretch equal to the extent of the loose tension and to assume undesirable shapes from th weight of the contents. * * * In the woven construction two *small wires*, which can be broken saparately, are used, while in my construction the same weight of metal, being in a single integral strand, affords greater strength and security."

152. The wooden slats employed by Hamilton simply constitute, as he says (page 1, line 46):

"the woof of the fabric, the warp consisting of a series of wires, a'. A fabric so constructed is strong, and, as will be seen, is readily flexed at any point without materially weakening the structure. This fabric I have found adapted in any convenient way in the construction of boxes for the shipment of fruits and other articles."

153. Thus Hamilton's method begins with a lot of uniform slats. From these he forms defective wired fabric, as Greenstreet points out, the dimensions of which are wholly indeterminate to begin with, but which has an advantage perhaps in that it can be suited to various selected dimensions of the intended box.

154. Inwood and Lavenberg's method, on the other hand, starts with definitely preformed side material in four pieces [fol. 581] cut to precise dimensions to suit the prospective box.

155. After Hamilton has produced his stretchable and indeterminately dimensioned fabric, he applies, by nails according to the nailed box method, the "channel-cleats" B,

"said cleats adapted, when the fabric is folded, to engage in their respective channels analogous sections which may constitute the ends or intermediate partitions of the box. • • • These channel-cleats are constructed of separate pieces of wood grooved, as shown, to form a groove or croze to receive an edge of the end pieces or partitions, said cleats being fastened in any suitable manner to the slats of which the fabric is composed—as, for instance, by tacks or nails. These channel-cleats, are permanently engaged with the fabric and remain engaged therewith when the package is knocked down and are in place to engage the edges of the end pieces or partitions in making up a package. *Two or more* of these channel-cleats may be employed to engage said end pieces or partitions." (Specification, page 1, line 54 et seq.)

156. Evidently Hamilton's "channel-cleats" have as their principal and apparently their sole object, to engage the box ends which fit at their edges into the channels of the cleats. This, of course, is convenient in a knocked-down box because the channel-cleats and ends may be engaged and disengaged as the box is erected or knocked down without the use of any fastening devices.

157. But Hamilton discloses no appreciation whatever of an *inter-relation of adjacent cleat ends*. For instance, referring to Hamilton's Fig. 1, the only functions which he ascribes to his channel-cleats B would be just as effectually performed if the top and bottom cleats were somewhat shorter than is shown in the drawings so that they would not actually contact at their ends with the vertical cleats. That is to say, the end-holding function of the cleats was their paramount purpose according to Hamilton's disclosure; and this purpose was adequately served by having the cleats secured to the slatted fabric simply by nails, according to the nailed box practice.

158. The idea of relating a pair of cleats and its side sheets to co-operate as a functional, integral, rigid unit, and of wiring such units together to produce a flexible and tensioned box, was unknown to Hamilton and is foreign to any suggestion in his patent.

[fol. 582] 159. More specifically, Hamilton does not disclose the important step of securing wires to cleats, and

completing the continuity of wires. He employed wires simply as the "warp" of his slatted fabric, to hold the slats together, and even then produced the defective stretchable fabric objected to by Greenstreet. Instead of connecting the ends of the interwoven wires in order to close the box Hamilton employs the separate wire ties D which simply tie together the edges of the cover and front side. Thus the woven wires of the fabric contribute nothing whatever to the strength of the box over the cover corner and, therefore, do not contribute the uniformity of strength and the uniform flexibility and tensioning which are contributed by that step of completing the wire continuity in the Inwood and Lavenberg method.

160. Howenstine, 453,479, June 2, 1891: This shows the box already discussed, in connection with the box reissue patent. Howenstine's method is conspicuously different from that of Inwood and Lavenberg. He did not make a wirebound box, and hence failed to disclose the fundamentally important step of completing the continuity of wire binding. Howenstine's reinforcement is in the form of "the stiffening-rods d" (specification, page 1, line 31), one end of each rod being simply "bent into hooked form" and "hooked upon the top edge" of the front side of the box. These rods are not stapled to the cleats. The rods extend only from the upper edge of the front side, across the bottom side, and to the upper edge of the rear side. At this latter point the box top is hinged to the rods (specification, page 2, line 12 et seq.), these "hinge-joints," "loosely connecting the lid and box body together" (ibid, line 21). Thus the lid is formed separately from the rest of the box and is then hinged thereto. Although the lid has the "batten-strip e'" (ibid, line 29) they are not assembled in relation to anything but the separately formed top. It is only after the top and its battens have been completed, that there is any assembly thereof with the rest of the box for the purpose of hinging them together.

161. Similar batten-strips i, corresponding to the front, bottom, and rear sides of the box, are secured to the box ends or heads, which are of a rigid, double-walled structure. Hence, in the Howenstine method there is no assembling of two or more cleats in a row, with the four side sheets, so as to predetermine all their inter-relationships.

On the contrary, Howenstine simply connects three side sheets together by the stiffening rods; he fastens the three [fol. 583] corresponding cleats at each end to the side sheets and fastens (at least two of) them to the ends; and as a separate operation he assembles the top isde sheets and the cleats and rods therefor and secures them together and only thereafter establishes a relationship between the top and the remainder of the box by hinging them together.

162. Because Howenstine omits the vital step of completing the continuity of the bindings and also omits the step of securing the bindings to the cleats, his method arrives at a structure which is fundamentally unlike the Inwod and Lavenberg box. Also Howenstine fails to suggest any disposition of wire or the like to produce the important progressive tensioning which characterizes the Inwood and Lavenberg method.

163. Howenstine completes his box by the typical nailed box practice of fastening side sheets to rigid ends.

164. Although the Howenstine patent rested in the art from 1891 through aproximately thirteen years before the Inwood and Lavenberg invention, and in spite of the Knudtson and Uhri and Rosback developments during more than a decade, the continuous effort in the art failed to devise the Inwood and Lavenberg method until they themselves entered the field in 1904.

165. Healy, 768,123, August 23, 1904: This is simply a reinforced nailed box and the method by which it is made involves one of the forms of nailed box practice.

166. The Healy box fails under distorting strains with the characteristic nailed box defects, namely, the tearing away of the side sheets at the nail holes, or the pulling out of the nails. This is so distinctively different from the behavior of the Inwood and Lavenberg box under similar strains, that it forecasts equally distinct differences in the box making procedures by which these divergent results are reached. And, in fact, these radically different results are directly attributable first to the conspicuous differences in selection of raw material so to speak, and, second, to the different ways in which the respective raw materials are combined.

167. As regards the reinforcing element, Healy starts with "straps" (page 1, line 10); "flexible straps" (ibid, line 13); "metallic straps 7, 8" (ibid, line 35). That Healy's concept involved "straps" as essential is established by the fact that the expression "flexible straps" is recited in each of the three claims of the patent. Thus the first step in Healy's procedure was the selection of straps while the first step in the Inwood and Lavenberg method is the selection of wires.

[fol. 584] 168. These two, in the respective procedures in which they are used, are by no means equivalent, structurally or functionally. On the contrary, it is largely due to the functional and structural differences of straps and wires that the two procedures arrive at such fundamentally unlike results. Healy's selection of straps contributes to enforce the typical nailed box behavior upon his final product. Inwood and Lavenberg's selection of wires contributes to the unique flexibility of their box that distinguishes it so importantly from the nailed box. It was an important part of the Inwood and Lavenberg inventive act, to recognize the functional differences between strap and wire, and to select the latter to perform the binding and tensioning purposes never before known in the art.

169. Healy's selection of the wooden elements of his box is importantly different from that of Inwood and Lavenberg.

170. Referring to Healy's Fig. 4 (a cross section, showing the parts more accurately in their true proportions than the perspective of Fig. 3)—it appears that the outer cleats 12, the inner cleats 11, the side sheets 1 and 3, and the ends 5 are all of very nearly the same thickness of lumber. The cleats 11 and 12 are perhaps a trifle thicker than the other parts, but very little, and all of these parts are shown as very thick compared with the dimensions of the box as a whole. This selection of raw materials is in accordance with nailed box practice, where cleated ends are employed. And this selection of materials was evidently deliberate and to serve the particular purposes which Healy discloses.

171. Healy says (page 1, line 8):

"My invention relates to that class of boxes or crates in which the sides are flexibly connected by means of straps, so as to be *compactly folded when not in use*."

172. And further (line 59):

"To set up the box or crate, it is simply necessary to raise the sides 1 and 3 perpendicular to side 2 and then slip the dovetail edges of ends 5, 6 down into the dovetail grooves formed by the cleats 11, 12 (see Fig. 4), when the interlocking of these dovetails will hold the box or crate in position to have its top 1 folded over and secured by passing the strap ends through loops 10 and bending them back upon themselves."

[fol. 585] 173. Thus Healy's objective was a knock down box which could be readily erected and knocked down without the use of any extraneous fastenings; but he was adhering to the nailed box traditions in that he employed rigid ends 5, 6, which, when assembled, were rigidly held between the cleats 11 and 12. In effect the inner and outer cleats 11 and 12 function as a unit.

174. Healy was required to use thick lumber for the ends 5 and 6 in order to provide the important dovetail interlock between the front and rear edges of the ends and the inner cleats 11, which inter-engagement, as Healy says, "will hold the box or crate in position to have its top 1 folded over and secured," etc. (specification, line 64).

175. With this thick material and the double cleats 11, 12, on the front and rear sides dovetailing with the thick ends, the structure is made rigid at the ends; and the securing of the side material to the outer cleats 12, imposes upon the structure the character of a nailed box having rigid ends,—an ultimate result due partly to the initial selection of materials, and a result enforced by the further selection of the metal straps which, being substantially inflexible transversely, enhance the rigidity of the ends, particularly if the straps are nailed to the cleats, as defendant suggests they are although the Healy patent does not say so.

176. On the other hand, the Inwood and Lavenberg procedure—as followed by the plaintiff and its licensees, by the defendant in the earlier litigation against the Chicago Mill and Lumber Company, and by the Gibbons Box Company, as well as is represented by the disclosures in all the Inwood and Lavenberg patents,—involves a selection of raw materials that differs radically from Healy's.

177. In the Inwood and Lavenberg method patent, for example, in Fig. 5, the cleats have a width more than four times the thickness of the sheet material. Fig. 7 shows the cleat in plan view with a thickness more than four times the thickness of the side material. On the precise scale of these figures the side material is 3 32 of an inch thick, while the cleats are $\frac{1}{2}$ inch wide by a little more than 9 16 inch thick.

178. In actual practice, as I have observed, the side material generally used is 3 16 inch thick. Employing this with cleats in the same proportion thereto as indicated in the Inwood and Lavenberg method patent, the cleats would be 1 inch x $1\frac{1}{8}$ inch, i. e., more than 1 inch square in cross-[fol. 586] section, as compared with a sheet only 3 16 of an inch thick.

179. My observation is that the cleats, in practice, are 15 16 inch wide and $\frac{3}{4}$ inch thick, or $\frac{7}{8}$ inch wide and 3 16 inch thick, these cleats being used with 3 16 inch thick side material. Thus substantially the disclosure of the Inwood and Lavenberg method patent is carried out in actual practice by the use of very thin side material with cleats approximately a square inch in cross-section.

180. It is possible for the Inwood and Lavenberg method to start with the selection of the very thin side material reinforced by the substantial cleats, because their selection of raw material also embraces the universally flexible wires, and their subsequent procedure assembles and incorporates these selected materials in a flexible box in which the wires contribute (and by means of their free flexibility and progressive tensioning, maintain) the principal strength of the structure against distorting strains, the wooden parts being only subordinately relied upon, and, therefore, much thinner wood being adequate for the purpose. This is conspicuously contrasted with the requirements of the rigid,

nailed box type of the Healy structure, which Healy supplied by selecting uniformly thick wooden elements.

181. In effect, Healy selected not only a different character of metal reinforcement and very differently proportioned wooden elements, but also selected his cleats to be substantially different in kind from each other and from the Inwood and Lavenberg cleats. At each end of the Healy box are presented, in functional and structural effect, two cleats of one kind and two of another. As already explained, the inner and outer cleats 11 and 12 co-operate as a single grooved cleat which is dovetailed to assist in holding the box together while it is being loaded and also to enhance materially the rigidity of the box by the effect of the dovetail engagement at opposite edges of the thick, rigid end binding and holding the corresponding side sheets securely together. Thus, these functionally grooved cleats on two sides of the Healy box co-operate with the ends in a distinctive fashion to contribute and enhance the rigidity of the box.

182. The other pair of cleats at each end of the Healy box comprise plain individual cleats which are not engaged with the ends at all except by contact with their upper and lower margins when the box is closed.

183. Thus, while the two functionally grooved cleats are practically rigid with the ends and constitute functionally [fol. 587] integral parts of the ends, the other two cleats perform very differently and, apparently, serve only to embrace the rigid ends and hold their side sheets rigidly associated with the ends.

184. This selection of non-uniform cleats by Healy is in marked contrast to Inwood and Lavenberg's selection of cleats which are constructed and function alike, each serving in effect as an element of a side section, and all the cleats, sheets and wires operating collectively to produce a box having a great uniformity of strength and capable of substantial flexing and deformation under distorting strains, while undergoing the progressive tensioning of the wires, without rupturing of the wooden parts which would result from strains overcoming a structural rigidity such as that occurring in the Healy box.

185. It is thus evident that Healy, on the one hand, and Inwood and Lavenberg, on the other, begin their procedures at radically different starting points in the selection of materials which they are to employ; and that the respective results in the finished products are conspicuously different, one being a typical nailed box reinforced, and the other being a flexible and elastic box which was "the first of its kind," as Judge Sanborn found.

186. Since the starting point and the terminus of the one method are so importantly different from the starting point and the terminus of the other method, it cannot be said that the methods are equivalent or that the Healy patent can be understood as teaching the procedure devised by Inwood and Lavenberg.

187. Inwood and Lavenberg make their box by a definite procedure which involves assembling side sheets and cleats in proper relation to each other so that when fastened together by the wires and staples they will form constituent parts of the completed box. There is a definite location and assembling of each side sheet and its cleats before the sheet, cleats and wires are fastened together by means of the staples.

188. There is nothing in the Healy patent to indicate that any such procedure is followed. Healy does not definitely and unmistakably describe the procedure followed in making his box. So far as there is any definite disclosure of procedure, it would appear from the paragraph at lines 33 to 46 of his specification, that he *first* connects his four side sheets together (without any cleats) by means of the flexible straps nailed, riveted or screwed to the sheets alone. Healy evidently uses flexible straps already provided with holes as [fol. 588] shown in Fig. 5 and with the box loops formed thereon before being attached to the side sheets. It would seem that the procedure was to assemble the four sides alongside and touching each other; then to place the straps above the sides; and then to drive "nails, rivets, prongs or screws" through the holes in the straps and into the box sides. Healy's description of the attachment of the straps to the sides is completed before he says anything whatever about the cleats.

189. It would be consistent with Healy's description, to make the Healy knock-down box after the side sheets and

flexible straps had been united together, by then turning over the united sides, with the connected flexible straps beneath, and to place thereon the several cleats in proper position and *thereafter* to fasten the cleats to the sides by nails or screws. At any rate, there is no disclosure whatever in the Healy patent of initially assembling a side sheet and its cleats, and then attaching the straps and securing the side sheets and cleats together simultaneously by the same fasteners.

190. In this connection it is to be noted, that while Healy's cleats 12 must be located at the extreme ends of the sides in order to secure a box of maximum capacity with the materials employed, nevertheless Healy says that the flexible straps may be located "at or near" the ends of the sides (for example, see Healy specification, lines 14 and 35). If this optional location of the straps "near" the ends of the sides is selected, then the cleats could not be fastened to the sides by the same nails which secure the straps to the sides.

191. Of course, Healy's inner underent cleats 11 which are employed to hold the box ends in place, do not register with the straps and hence could not be secured to the box sides by the same fastenings which attach the straps. In this connection, however, it is to be noted that Healy suggests at line 70 that the ends 5 and 6 need not be used when "lard and paint in cans is to be shipped, as the cleats will prevent the cans from slipping out." Under these circumstances the inner underent cleats 11 might be unnecessary (though the specification does not say so) and the rigidity of the lard and paint cans themselves obviate the necessity of rigidity in the surrounding box. The box could be used with the rigid paint and lard cans if the inner underent cleats 11 were in place so that the suggestion in the specification that the box can be used without the ends does not require the omission of the inner underent cleats 11.

192. Healy's inner underent cleats 11 must be accurately [fol. 589] located with respect to the corresponding outer cleats 12 since the dovetailed ends must fit between these pairs of cleats 11 and 12. These inner underent cleats are unmistakably not fastened to the sides by the same fasteners which secure the overlying flexible straps; and there is no suggestion whatever in the Healy patent that the inner

undercut cleats 11 are secured at any different stage in the manufacture than when the outer cleats 12 are secured. On the contrary, in the light of Healy's description, the logical procedure seems to be to secure straps and side sheets together as a first operation, and then, separately, to secure all the ten cleat pieces to the side sheets by additional nails or screws.

193. Accordingly, Healy does not disclose the procedure followed by Inwood and Lavenberg as set forth in the method patent in suit No. 1,128,252.

194. There is one particular characteristic set forth in this Inwood and Lavenberg patent which still further distinguishes from Healy. Inwood and Lavenberg do not staple the binding wires close to the meeting edges of neighboring side sheets but at substantial distances therefrom, so that the sections of the wires which bridge the corner edges of the boxes have substantial lengths between the attaching staples. This is an important characteristic in the manufacture of the Inwood and Lavenberg box because these unstapled bridging sections of the wires permit the relative longitudinal shifting of the meeting edges of the sections of the box, and the progressive tensioning of the wires results as the box sections shift with respect to each other. Thus the lateral flexibility of the wires is utilized in maintaining the integrity of the box against unusual strains.

195. This emphasizes the distinction between the universally flexible wires employed by Inwood and Lavenberg and the straps of Healy which have no useful lateral flexibility. No matter where Healy's strap fastening nails are located with respect to the corner edges of the box, there is no resulting lateral flexing of the metal straps which is utilized when the box is subjected to distorting strains.

196. It is especialy important that Healy *omits* the vital step of *securing the box parts together by wires*. Securing them together by *straps* is a radically different step, producing wholly different results. Healy also omits the step of disposing the wires to produce the progressive tensioning under distorting strains, which characterizes the Inwood and Lavenberg method.

197. The invention of this Healy patent was nearly con- [fol. 590] temporaneous with the Inwood and Lavenberg invention, Healy preceding Inwood and Lavenberg by a few months only. Healy's application was filed April 26, 1904, and the Inwood and Lavenberg original application was filed October 17, 1904, the two inventions being thus less than six months apart.

198. As I understand Mr. McElroy's conclusions, he is of the opinion that Inwood and Lavenberg devised their method simply by the optional selection of well known individual features in the earlier art. Except possibly for the additional light which Healy may have given to Inwood and Lavenberg (concerning which I have already expressed my views), Healy had all the material upon which to exercise his options, which Inwood and Lavenberg had. The validity of this "optional" view can be tested by ascertaining what Healy actually did.

199. Individually considered, prior to Healy, many of the features utilized by Inwood and Lavenberg were separately old.

200. Rosback had illustrated the wirebound feature, and wires jointed to the thin sheet material and the thick cleats by the same staples.

201. Archer had illustrated side sections independent of each other except for the attaching metal edgings, each side section having its own cleats. Moreover, Archer had illustrated the spaced relation between the cleats and the sides, so that when folded the sheets should overlap each other.

202. But nobody had united all of these features in a single method or had foreseen the useful results which would follow therefrom. No one had assembled and wired together the predimensioned and preformed cleats and sheets, to produce the flexible and progressively tensionable box.

203. Therefore, Healy had all of the individual elements to select from, which Inwood and Lavenberg, a few months later, had—barring, of course, such light as Healy may have shed upon Inwood and Lavenberg.

204. Hence, on the theory that all the skilled box mechanic had to do was to select individual features from

the prior art, in the exercise of his options, it is interesting to examine the Healy patent with the view of ascertaining just what he did select from the prior art.

205. In the first place, Healy did not use straight-edged thin sheets, but he did use beveled-edged thick sheets; he did not use uniform, thick cleats, but did use different kinds of cleats of about the same thickness as his sheets.
[fol. 591] Healy did not use binding wires, but he did use flat sheet-metal straps.

Healy's method of using flat metal straps is substantially different, as already explained, from the use of binding wires which Inwood and Lavenberg employ.

Even had Healy employed cleats and side sheets of the same character and with the same spaced relation as those used by Inwood and Lavenberg, he could not have employed his flat metal straps so as to be progressively tensioned under distorting strains.

206. Hence, Healy's method lacks the tensioning of the wires utilized by Inwood and Lavenberg and which is not described in any of the prior patents or involved in their methods.

207. Moreover, by reason of the fact that Healy uses flat metal straps instead of wires, he has to provide the "box loops" which he illustrates and describes, for the purpose of fastening the box when the cover is closed. This fastening does not permit the cover to be pulled down tight in place, as is the case with the binding wires which Inwood and Lavenberg use; and consequently the step of completing the continuity of the Healy straps does not provide the uniformity of tightness and progressive tensioning which results when the Inwood and Lavenberg wire ends are twisted together.

208. In other words, the use of flat metal straps in Healy's method is not the equivalent of the use of binding wires in the Inwood and Lavenberg method, since they lack the important characteristics of the wires, namely, closing the box tight, the elimination of any special fastening means, the side-wise flexibility, and the tensioning.

209. Hence, although Healy had before him the same prior art (except the Healy patent itself) which was before Inwood and Lavenberg,—he did not, by any process of

selection, or the exercise of options, devise either Inwood and Lavenberg's choice of materials, or finished product, nor did he employ the important assembling and wiring and tensioning steps by which Inwood and Lavenberg reached their result.

[fol. 5[illegible]] The Wired and Slatted Fabric Patents

Greenstreet, 579,574, March 30, 1897.
Greenstreet, 652,357, June 26, 1900.
Greenstreet, 722,423, March 10, 1903.
Maltby, 666,872, Jan. 29, 1901.
Lipps & Springer, 801,998, Oct. 17, 1905.

210. It is true of all these patents that whatever methods are disclosed proceed first by making a so-called fabric consisting of a series of parallel slats connected together in one way or another by wires, this fabric being foldable wherever there is an interval between one slat and the next. In no instance does any of these patents show the slatted fabric is wrapped just as it would be wrapped if the ends of which indicate and determine, at least approximately, the line of fold for a box corner.

211. The slatted fabrics are simply wrapped around box ends and secured thereto in the manner of nailed boxes. Something analogous to cleats, broadly speaking, is shown in the Greenstreet patent No. 722,423, but these cleats, for each box end, are all secured in a rigid four-sided frame to end pieces and constitute, in effect, structural and functional elements of the box ends around which the slatted fabric is wrapped just as it would be wrapped if the ends were solid and uncleated pieces.

212. So far as there is an analogy at all between these boxes or crates and the Inwood and Lavenberg boxes, the slatted fabric of the one corresponds to the Inwood and Lavenberg uncleated side sheet material and the prior art cleated or uncleated ends (e. g., Greenstreet 722,423) correspond to the thin end sheets employed in the Inwood and Lavenberg box. The Inwood and Lavenberg cleats, assembled in line, and related to each other and to the side sheets, are nowhere shown in these patents.

213. When the slatted and uncleated fabric is wrapped around the ends, there is nothing whatever to predetermine the particular points at which the fabric shall be folded or the particular relationship of any given part of the fabric to any given part of the box end, except in so far as the employment of thicker slats for the box corner, as contemplated in patent 579,574, serve as indications of the places where folding should be done. For instance, a workman given the slatted fabric of Greenstreet 722,423 and the rigid cleated end thereof, might begin to apply the [fol. 593] fabric to the ends in the manner indicated in Fig. 3; or he might secure one extremity of the fabric to a point at the middle of a cleat at each end of the box, and thereafter wrap the fabric around and secure it so that the other extremity would lie adjacent the first, midway between the ends of two of the cleats.

214. Any given slat might stand in the finished box either in the same plane with or at right angles to a neighboring slat, according as the workman happened to assemble the generally flexible fabric with whatever end he happened to employ. The width or height of an end is approximately a multiple of the width of a slat plus an inter-slat space, if the space occurred; and from a slatted fabric of indefinite length, the workman might clip off as many slats as were necessary to encircle whatever ends he wished to use, perhaps with one extra slat to provide for an overlapping of slats where the extremities of fabric met in the finished box. All this may have been advantageous for certain purposes, but it is strikingly different from the Inwood and Lavenberg method.

215. According to Inwood and Lavenberg's procedure, every dimension of the prospective box is definitely predetermined before cleats or sheets are prepared. By reason of the preforming of sheets and cleats and the assembly and wiring thereof in predetermined relationships, the precise dimensions, shape and character of the finished box are explicitly predetermined, and however many times the box may be folded or unfolded, the operator can always reproduce the result, and his procedure in forming the box is indicated to him by the box parts themselves and their predetermined relationships. In short, the Inwood and

Lavenberg procedure begins at a definite starting point leading to a predetermined result, and all the intermediate steps contribute to that result.

216. Particular significance attaches in the Inwood and Lavenberg method to the cleats which are altogether lacking from the slatted fabrics referred to. Each Inwood and Lavenberg cleat predetermines approximately the corresponding dimension of the box, and definitely prevents any folding or unfolding at any point intermediate the cleat ends. The relationship between neighboring cleat ends determines the location of the box corner and prevents any occurrence of a box corner at any other point. The relationship between cleats for opposite and non-adjacent sides of the box not only predetermines approximately the dimensions of those respective sides, but also approxi- [fol. 594] mately the dimensions of the intervening sides. Hence it is that the relationship of one cleat to any other at the time when the two are wired together, has a definite predeterminative effect upon the finished box and all the other elements thereof. Thus, in the practice of the Inwood and Lavenberg method the novel concept of wiring together separate cleats so that they shall be at once flexibly connected but in a predetermined relation, is importantly distinctive from any of the methods involving uncleated, slatted fabrics.

217. Referring specifically to the patents of this class mentioned by Mr. McElroy:

218. Greenstreet 579,574, March 30, 1897: Fig. 1A shows an endless chain conveyor F upon each link of which occurs two projecting lugs between which is to be positioned a slat taken from a hopper E. The resulting fabric is indicated issuing from the machine at the left of Fig. 1A. The specification (page 1, line 13) refers to this as "the slat and wire material required in the production of the shipping cases described in letters patents No. 547,486, issued to me (Greenstreet)."

220. The Greenstreet patent 547,486 referred to in the above quotation from the specification of 579,574, shows thick slats at intervals along the length of the slatted fabric, which thick slats are intended to occur at the box corners and to engage notches provided for the purpose

in the solid box ends. The occurrence of these thick slats and the notches in the ends would, of course, assist the operator in assembling the fabric with the ends, but they would not preclude the operator from locating the fabric upon the ends in a manner different from that intended, or from applying the fabric to ends of dimensions and shapes different from those intended. That is to say, even the provision of these thicker slats does not assist in the definite predetermination of the relationship of the box parts in the sense in which that is done by the assembling and wiring of the cleats according to the Inwood and Lavenberg method.

221. The Greenstreet patent 579,574 (specification, page 3, line 33) says:

"I am able to bind with wire and secure by staples tight boxes, that is, boxes the sides of which are made from one-piece material or one or more pieces to the side, the only change required being probably a difference in the spurs on the chain and in the absence of the feed-slides."

222. This suggestion, so far as it goes, tends to carry [fol. 595] the Greenstreet idea beyond the field of mere slatted fabric, but still Greenstreet fails to suggest any method by which cleats could be incorporated in his foldable structure, or any method by which cleats could be flexibly conjoined so as to predetermine their relationships in the finished box.

223. Another circumstance which renders the disclosure of the Greenstreet patents irrelevant to the Inwood and Lavenberg method is that nowhere does Greenstreet suggest that all-important method step of completing the continuity of the wire binding. On the contrary, Greenstreet leaves his wire or strap reinforcement discontinuous at the edge of the box top and secures the closure of the box by nailing down the extra slat A' shown in the drawings of the Greenstreet patent 547,486. Without completing the continuity of the wire binding, the objective of the Inwood and Lavenberg method would be altogether missed and the unique flexibility, elasticity and tensioning would not be attained.

224. Furthermore, the securing of wires to cleats which constitutes so important a part of the Inwood and Laven-

berg method is quite lacking from the Greenstreet disclosures; and even if the slatted fabric or the collection of continuous individual side sheets, suggested by Greenstreet, were wrapped around cleated ends, the important co-action of wires and cleats would be omitted, with the result that the box would retain its character as a nailed box instead of having the flexible and elastic qualities of the box which results from the Inwood and Lavenberg method.

225. Greenstreet 652,357, June 26, 1900: This shows a machine for "forming slatted box stock" intended to be "more efficient than that of the somewhat similar machine shown in letters patent No. 579,574" (specification, page 1, line 11 et seq.). What I have already said with regard to the earlier Greenstreet method applies likewise to the method disclosed in this patent No. 652,357.

226. In addition, however, this patent says: "In slatted box-stock it is often desirable to supplement the slat-wires by longitudinal cleats or runners." These so-called "cleats or runners," however, are not to be confused with cleats of the character employed in the Inwood and Lavenberg method. They are simply thin, flexible strips which are fed into the machine beneath the slats to register with the wires which are fed above the slats, the wires, slats, and "runners" of indefinite length being secured together by the [fol. 596] same staples, and being fed in by means of a toothed feed wheel 98. (See Fig. 5.)

227. These runners do not correspond in any degree, functionally or structurally with the cleats of the Inwood and Lavenberg method, because the former have no relationship at all to the ends of the box. Observing the Greenstreet machine in horizontal plan view in Fig. 2, it will be seen that the slat hopper end 26 at the left and the corresponding hopper end 26 at the right mark the location of the ends of the slats which are to be secured to the box ends. But the "runners" are fed in beneath the slats through the guideways 97-97 appearing at the bottom of Fig. 2 and it will be noted that these guides 97-97 are positioned between and at some distance from the hopper ends 26-26 so that each runner is located remote from the ends of the slats and not in a position to enter into the organization of or to co-operate with the ends of the box.

228. The exact purpose of the "runners" of this Greenstreet patent 652,357 is rather obscure; but the situation is clarified by reference to the next patent.

229. Greenstreet 722,423, March 10, 1903: This illustrates a crate formed from the slatted box stock and equipped with runners E, like the runners referred to in the Greenstreet patent 652,357. It will be noted that the application for this crate patent 722,423 was filed on March 21, 1898, while the application for the earlier issued patent No. 652,357 was not filed until more than a year later, on April 24, 1899; thus, evidently the crate invention preceded the machine invention, and the machine was designed to make the slatted fabric having the runners disclosed in the crate patent.

230. In the specification of the crate patent the function and purpose of the runners E (Figs. 1 and 6) is explained as follows (specification, page 1, line 49):

"I have found in practice that the wires B are apt to kink up or buckle between the staples and injure the looks of the fabric, as well as change its longitudinal dimensions. To remedy this, I have been led to combine with the fabric a stay or expansion-strip E of wood, which is laid transversely of the slats and parallel with the wires and stapled to the slats by the wire-securing staples C. This stay or expansion-strip holds the slats at the relative positions they occupy when they are first secured to the wires and keeps the wires extended or drawn out to their full length, thus avoiding the kinking or buckling referred to. The stay may [fol. 597] either be a strip applied mainly or solely for this purpose, or the function may be devolved upon outside cleats secured to the wires and slats in the described manner. The stays may be inside the box, as shown, the fabric being bent in the direction to effect such arrangement. The stays are shown as located along those wires which are nearest the ends of the slats. The stays when thus applied within the box are preferably of light stuff and may be even thinner than the slats themselves. I also use the stays with large veneers F, as shown in Fig. 6, having similar wires B' stapled thereto at intervals by staples C'. In this case the stays E' may be either inside or outside and are applied in line with the wires, and they serve in this form of the invention to prevent any buckling of the wires being caused

by the shrinking of the veneer. Such shrinking would tend unless thus restrained to move the staples closer together and to bend the wires between the staples. By means of these stays the full length of the fabric is maintained after it is made up into the box, and the box does not lose its original dimensions nor become unsightly."

231. The relationship between the Greenstreet expansion-strip E and the box end is well shown in the fragmentary section in Fig. 5 in which the stay E is shown to be remote from the box end and not at all comparable to a "cleat," as that expression is used in connection with the Inwood and Lavenberg method.

232. Here again Greenstreet does not employ that important method step—the completing of the continuity of the binding. On the contrary, he overlaps the two slats at the extremities of the fabric, as shown at the upper left-hand corner of Fig. 3 and nails them together. (Specification, page 1, line 91 et seq.) Although Greenstreet shows the cleated ends already referred to above (Fig. 4), these are simply structural parts of rigid end pieces. The slatted fabric is simply nailed to these after the fashion of a nailed box, and there is no suggestion of performing the step of securing wires to these end cleats in accordance with the Inwood and Lavenberg method.

233. It is noteworthy that Greenstreet, in his most recent patent, No. 722,423, says (page 1, line 36):

"In said drawings, A represents the slats of which the combined wood and metal sheets may be chiefly composed. They are formed of wood and are thin and may be and pre- [fol. 598] ferably are cut into the proper size from veneer stock. They are united together to form a long or continuous sheet or fabric, which may be cut into lengths, each adapted to form the sides, top, and bottom of the boxes by means of exterior continuous wires B, laid transversely of the slats A and secured to each of them by staples C, the ends of which are bent down or clenched. As thus far described the fabric is not new."

234. Thus, when Greenstreet filed the application for this patent in March, 1898, he returned to the idea of the con-

tinuous lengths of slatted fabric having no predetermined foldable relationship between its parts, or to any particular end dimensions. Although Greenstreet had suggested in his patent No. 547,486, October 8, 1895, the idea of the thicker slats to be positioned at the box corners, even this slight aid to the assembly of the slatted fabric in the predetermined relation to an end had evidently proved of little, if any, practical utility and had been abandoned in favor of the slatted fabric having slats of uniform thickness, as disclosed in the later patent, No. 722,423, dated March 10, 1903. In other words, the expedient of the thickened slats in the earlier Greenstreet patent made no material impression upon the art.

235. Maltby, 666,872, January 29, 1901: This "relates to a barrel-making machine, and more particularly to a machine for attaching the hoops to the staves of a knock-down barrel." (Specification, page 1, line 8 *et seq.*) "The hoops to be fastened to the staves are supposed to be of wire, either round or any desired polygonal form in cross-section." (Specification, page 2, line 112.) The barrel staves are shown in position in Fig. 8. They are simply curved barrel staves placed edge to edge and connected by wires. No cleats are employed.

236. This patent adds nothing to the disclosure of the Greenstreet patents already referred to, the only difference being that the slatted fabric employs slats that are curved in cross-section instead of flat and are intended to be used in a barrel instead of in a crate and are therefore not spaced apart but are placed edge to edge.

237. Lipps & Springer, 801,998, October 17, 1905: The slatted fabric of this patent is shown in Fig. 14 (sheet 2) of the drawings and is described as "showing a section or fragment of the finished product of the improved machine." (Specification, page 1, line 83.) Since the patent relates to the machine and since the disclosed method does not pertinently differ from those disclosed in the Greenstreet and other patents, this Lipps & Springer patent may be dis- [fol. 599] missed without further discussion. It adds nothing to the prior art already dealt with.

238. In summary, with reference to the slatted fabric patents: None of these involves the assembling of cleats

with reference to each other, and to the sheets, for the purpose of predetermining their coaction in a definite box structure. There is no instance of completing the continuity of the wire, which is one of the vital steps of the Inwood and Lavenberg method. The resulting boxes and crates which employ the slatted fabric are all of the nailed box type and, therefore, the objective and result of the prior art processes are distinctly different from those of the Inwood and Lavenberg method. Although Greenstreet's earliest patent No. 547,186, issued October 8, 1895, on an application filed in May of that year, and although Greenstreet was apparently active in the art, with further developments, as indicated in his following patents 652,357 and 722,423 (the latter applied for in March, 1898, and issued in March, 1903), nothing which Greenstreet had to contribute to the art ever resulted in the practice of a method involving the characteristics of the Inwood and Lavenberg method or in the production of such a box.

239. The Patents on the Making of the Rosback Box.

Knudtson & Uhri, 518,038, April 10, 1894.
Rosback, 608,790, August 9, 1898.
Uhri, 608,809, August 9, 1898.
Rosback, 608,917, August 9, 1898.
Rosback, 614,348, November 15, 1898.
Rosback, 625,258, May 30, 1899.

240. These six patents represent continuous inventive activity during which the inventors always adhered to the method which involved, as one of its fundamentals, the production of a foldable relationship in box parts by a *cutting* operation (by the step-mitering machines) as distinguished from the assembling and wiring operation devised by Inwood and Lavenberg.

241. The Rosback methods involved two distinct steps and two distinct machines: first, the assembling of the three parts for the preliminary rigid blank and the application of the wire thereto; and, second, the severing and dimensioning of the cleats, trimming of the ends of the blank, and scoring the side sheets, to produce the foldable blank.

[fol. 600] 242. The Rosback first step predetermined only a single dimension of the box, namely, the length of the box from end to end, i. e., the width of the preliminary rigid blank measured transversely of the cleats. When the rigid preliminary blank had been made upon the one machine, the eventually flexible blank, its cross sectional shape and its width and depth, depended wholly upon the adjustment and operation of the step mitering machine. According as the step mitering machine was adjusted, the blank and box could be made square or oblong in cross section and otherwise varied within wide limits. And these method characteristics inhered in the entire practice of what I have called the Rosback idea, with never any suggestion of predetermining the dimensions by a preliminary operation, and then securing the interrelationships of box parts by assembling and wiring them in predetermined relative positions.

243. While the Rosback method involved the one important step of completing the continuity of the wire, that is the only respect in which the Rosback method is at all comparable with the Inwood and Lavenberg method, and the results of flexibility and progressive tensioning in the finished box were prevented by the Rosback method instead of being deliberately provided as in the Inwood and Lavenberg method.

244. While the inventors who worked upon the Rosback method always started with one veneer sheet (either integral or formed of two or more pieces) having but one box dimension (the length) predetermined therein, and two cleat strips roughly dimensioned to be long enough to supply ultimately all four cleats for an end of the box—Inwood and Lavenberg started with twelve entirely separate and independent parts, each precisely dimensioned to suit its position and functioned in the box and all dimensioned with reference to each other.

245. Having started with these radically different sets of elements, the Rosback inventors assembled the three parts, with no necessary regard for any dimension of the finished box except its length, and then wired these parts to produce a rigid preliminary blank which represented no

dimension of the box except its length. On the other hand, Inwood and Lavenberg assembled and wired together their twelve parts, each in a definitely predetermined relation to all of the other eleven, so that all should be incorporated in definite structural and functional correlation in exactly the box for which each of the twelve parts had ben dimensioned in the first place.

246. In the Rosback method the first determination of the [fol. 601] width and depth dimensions of the box was arrived at in the adjustment and operation of the step-mitering machine.

247. In the matter of procedure, I can find no similarity whatever, to say nothing of equivalency, between the Rosback, and the Inwood and Lavenberg methods.

Summary of the Prior Art

248. As to the machine patents in suit, the prior art contains no suggestion of the following:

1. Means for positioning any two alined, preformed cleats in co-operative foldable relationship preparatory to attaching binding wires by which to perpetuate that relationship and predetermine the co-ordination of the cleats in the finished box.

2. Means to locate the separate rigid side sections in co-operative foldable relationship preparatory to the attachment of the wires.

3. Positioning elements to contact with the rear ends respectively of any two alined cleats to predetermine their co-operative foldable relationship preparatory to the attachment of the binding wires.

4. Auxiliary devices (e. g., the springs 15 of the work-holder patent in suit) to assist in holding the alined cleats with their rear ends against positioning devices so as to maintain them in co-operative foldable relationship during wire attachment.

5. Any or all of the foregoing plus mechanism for applying and attaching binding wire to the box parts while they are positioned in co-operative foldable relationship.

249. As regards the method patent in suit, the prior art fails to suggest the following:

1. The initial selection and preparation of the preformed and predimensioned individual cleats and side sheets plus universally flexible wires and the straddling staples.

2. The intermediate steps of assembling a pair of cleats and with each side sheet and the assembling of alined cleats in co-operative foldable relationship to pred-termine the mating of their adjacent ends in the completed box.

3. The stapling of wire to the sheets and cleats so that each side section shall remain substantially disconnected from adjacent side sections except by the freely flexible wire [fol. 602] and such interengagement as the cleat ends may have.

4. The broad idea of assembling and wiring together preformed sheets and cleats and co-ordinating them with wire so as to leave each side section of the box substantially disconnected from adjacent side sections except by the freely flexible wire, and therefore free to shift or slide in relation to adjacent sections under diagonal distortion, while subject to the resistance of the tensile strength of the wire and without substantial tendency to rupture the wooden parts of the box.

5. Any or all of the foregoing plus the securing together of the ends of each wire binding so as to complete the continuity thereof and make the box uniformly strong at all four corners and permit at all four corners relative shifting of the box sides subject to the resistance of the tensile strength of the wires.

6. Any or all of the foregoing plus the step of placing the wires under tension over the box corners to enhance the initial resistance to distortion.

7. Any or all the foregoing plus the assembling and coordinating of the wooden parts and the wires to produce progressive tensioning of the wires over the box corners under diagonal distortion.

8. The preforming and predimensioning of cleats and side sheets so that certain ends of certain cleats shall fall

short of the edges of their side sheets and thereby leave margins of the latter to overlap the edges of adjacent side sheets, plus the assembling and wiring thereof to produce the lap-corner flexible box.

250. I have already pointed out the agreement between Mr. McElroy and myself that precisely the Inwood and Lavenberg blank and box can be made by the so-called "Modified Rosback Method" illustrated in my sketch entitled "Plaintiffs' Exhibit Browne Sketch of Modified Rosback Method" [*ante*, page 568], and that that method, although producing an equivalent result, would not be equivalent as a method to that of the patent in suit. It follows that defendant might make boxes by the modified Rosback method, if it would, and without employing the subject-matter of the method patent in suit, but it seems unmistakably clear to me that defendant has ignored the teachings of Rosback and the other prior art inventors and has closely followed the essential teachings of the Inwood and Lavenberg patents in suit.

Arthur S. Browne.

[fol. 603] Pursuant to due notice upon defendant's counsel, Arthur S. Browne, plaintiffs' expert, was produced for cross-examination at the offices of Emery, Booth, Janney & Varney, 10 South La Salle Street, Chicago, Ill., at 2 o'clock p. m., on Tuesday, August 25th, 1925.

Present: Howard M. Cox, Esq., for defendant; Edward S. White, Esq., for plaintiffs; Howard S. McLaughlin, Esq., for plaintiffs.

Cross-examination.

By Mr. Cox:

X Q. 4. You have referred in your deposition to the Rosback patents. Isn't Rosback concerned with positioning of the box blank parts?

A. Yes.

By Mr. White: Counsel is asked to specify which Rosback patent he is referring to in the last preceding question.

By Mr. Cox: I had in mind particularly the general teachings of the Rosback patents which were referred to a number of times by the witness in his deposition and including patents Nos. 608,796, 608,917, 609,630, 614,348, 625,958. That's what you understood in answering, Mr. Browne?

A. Yes.

X Q. 5. In the Rosback patents, the cleats are positioned relatively to each other and to the sheet material, isn't that true?

A. Yes.

X Q. 6. And it is true also isn't it, that in the Rosback patent 608,796, he specifies the distance of one cleat back of the other in the making of succeeding blanks? I call your attention especially to page 4, commencing line 73.

A. Yes.

X Q 7. In the Rosback machine, how many cleat pushers are necessary for a blank having two cleats?

A. Two, one for each of the two parallel cleats.

X Q. 8. In the alternate cleated blank, in which the blank is provided with four cleats, how many pushers are required?

A. Four for the cleats.

X Q. 9. Assuming that it were desired to make a six-sided box blank as illustrated in Defendant's Exhibit 2, how many pushers would be required?

A. Assuming that this blank to be made on a machine [fol. 604] like defendant's machine or upon a machine like the Inwood and Lavenberg patent, there would be six pushers or spacers, at each side of the machine, or twelve in all.

X Q. 10. I will ask you the same question with respect to Defendant's Exhibit 3, which shows an eight-sided box blank.

A. There would be sixteen pushers, eight at each side.

X Q. 11. In other words, it is true, isn't it that it is the form of the blank which dictates the number of pushers that must be used?

A. Yes.

I regard as the workholder in defendant's machine the feed chains with their pushers and the channels in which the cleats rest. Also the parts of defendant's machines

which Mr. Steele has called "detents" contribute to the holding of the cleats in correct position when the initial staples are driven.

X Q. 13. It is true, isn't it, that for making an alternate cleat blank the only difference between defendant's machine and the Rosback machine is that in defendant's machine there is one additional pusher on each feed chain for each blank?

A. No. The additional pushers on defendant's machine have to be specifically related to the other pushers on the machine so that when the cleats are secured to the sheets they will be assembled in proper foldable relation. Also, I do not recall anything in the Rosback patents comparable to the detents of defendant's machine.

There were detents as I recall, in the Gibbons machine. I am testifying as if there were detents in all of defendant's machines including the one at the H. R. Gibbons Box Co.

X Q. 16. And if the defendant's machine should omit these detents as you call them, what, if any, bearing would that have upon the question as to whether in your opinion the defendant's machine would embody the invention of the patents in suit?

A. Assuming that the defendant's machine would work properly without these detents, I think they would embody the subject-matter of the patents in suit.

X Q. 17. Are you willing or not to make that assumption?

A. I do not know whether the machines would work properly without these detents and so am unwilling to make the assumption.

X Q. 18. What functions do you ascribe to the so-called detents in defendant's machine?

[fol. 605] In making the alternate cleated blanks, the forward ends of these detents act as clincher blocks for the staples which are driven into the side sheets which have no cleats beneath them. When a cleat comes along it finds the forward clinching end of the detent in its path and it pushes this forward end of the detent out of its way and as the detent is spring-pressed it subsequently bears against the side of this cleat during its further progress in the machine. In performing this action the detent insures that

the cleat is bearing against the pusher and hence that the cleat occupies its proper position when the first staple is driven into the cleat.

X Q. 19. Can you point out any such detent in any of the Rosback patents?

A. I do not recall any such detent in the Rosback patents. Certainly there is no such detent in the Rosback patents which successively acts upon two cleats entering into the formation of a single blank.

X Q. 20. If you are correct in thinking that there is no such detent in any of the Rosback machines, what then in Rosback keeps the cleat in contact with its pusher, for example, in Rosback 614,348?

A. In this Rosback patent 614,348 the guide bars B′ beneath the two long cleats and upon which the cleats slide in their advance are pressed upwardly by springs s^4, as shown in Figs. 11 and 13; and overhanging the sheet material are fixed overlapping edges s' so that friction is imposed upon the cleats and sheet to prevent any overrunning thereof as the pushers advance them through the machine, thus maintaining the contact between the pushers and the material during their progress through the machine.

The Knudtson & Uhri patent No. 518,038 shows in Figs. 17 and 18 a spring-pressed roller f^{55} which bears against the side face of the neighboring cleat, concerning which the specification, page 7, line 125, says:

"The wheels f^{55} operate as clamps to hold the cleats Z^2 against the flanges f', as indicated in Fig. 19."

(I think the reference here should be to Fig. 20 instead of Fig. 19.)

Also the Rosback patent No. 625,958, May 30, 1899, shows leaf springs *d* which bear against the inner faces of the cleats, these being referred to in the specification as "clamping springs," page 2, line 89, and which create friction against which the cleats must be pushed forward.

[fol. 606] Similar springs are shown in the Rosback patent 636,068, October 31, 1899.

It may be said that it was a common expedient with Rosback and Knudtson & Uhri, to keep the cleat in contact with

its pusher by providing means for retarding the cleat in its travel along the cleat guide. Broadly considered, that is what defendant does in its machine.

X Q. 23. In X Q. 13 I asked whether it isn't true that the only difference between defendant's machine and the Rosback machine is that in defendant's machine there is one additional pusher on each feed chain for each blank and in your answer you brought in something about adjustment. Assuming proper adjustment, the Rosback machine and defendant's machine would be the same if an additional cleat pusher were added in proper position on each feed chain for any given blank. That is true, isn't it?

A. No. It is primarily not a matter of adjustment but of the co-ordination of the pushers with respect to the relation of the parts pushed to the situation which they are to occupy in the completed box. In defendant's machine cleat pushers for the several cleats are so located with respect to each other that as the successive cleats entering into the same box are pushed along past the stapling devices, these cleats in line with each other will be so located that when the box is complete these cleats will be properly related to each other. Also with the defendant's machines, the detent is so located that they are encountered by the advancing ends of the successive cleats of the same box as they approach the stapling point as to insure the bearing of the rear ends of the cleats against their pushers when the stapling begins.

X Q. 24. You recall, don't you, that in defendant's machine, frictional retarding means are provided in the guides for holding back the cleats so that they remain in contact with the pushers?

A. I have not seen one of the defendant's machines for something over three years and even here I make the assumption that the Gibbons machine I testified about three years ago is one of the present defendant's machines.

As a matter of personal recollection, I do not recall the presence of any such friction devices in the Gibbons machine which I saw three years ago and I did not notice the presence of any such devices in Plaintiffs' Exhibits, Nos. 8, 9, 12, 16 and 17 [*ante*, pp. 65, 68, 79, 100 and 104], illustrating defendant's machines as they are now made. Nor do I recall anything either in Mr. Steele's testimony or Mr. McElroy's

[fol. 607] testimony regarding such friction devices other than the detents shown at 36 in the exhibits just mentioned.

X Q. 28. Do you regard the word "detent" as an appropriate term for the part 36 in defendant's machine?

A. I do not think I should have chosen that, but as it has been used, I have retained it so as not to introduce any new phraseology. The part in question has several functions, one of which is a detaining function, so that the term is not altogether inappropriate. I think I would have called it restraining lever, and in connection with the construction shown in Plaintiffs' Exhibits Nos. 8, 9 and 12, I should have added its anvil office. I should have called it a restraining anvil lever. When defendants machine is employed to make an eight-cleated blank this element 36, according to my understanding, does not operate as an anvil or clincher block. Disregarding the clincher block function, if and when called into play, it would be proper to refer to the lever *f*' shown in Fig. 18 and elsewhere in Knudtson & Uhri 518,038 as a "restraining lever" for the purpose of holding the cleat back in contact with its pusher. I do not think it makes much difference what the device is called. It is the function which the device performs which is important. Mr. Steele's selection of the word "detent" has, at least, the merit of being a single short word, and not inappropriate.

X Q. 29. I agree with you that it is the function which is important and I would ask whether the same function is not performed in substantially the same way by the springs *d* in Rosback 625,958 where the springs or resilient arms project into the path of the oncoming cleat and detain it temporarily if out of contact with the pusher until the pusher comes along and picks it up.

A. No. This Rosback patent 625,958 illustrates four of the clamping springs *d* in each channel so that the friction creating function of the clamping springs is present throughout the entire passage of the long cleats through the machine.

On the contrary, in the defendant's machines the detents 36 are located only close to the stapling position. If, however, you omit the word "temporarily" from your ques-

tion I will answer it in the affirmative. To make it brief, we may say that the springs *d* in Rosback 625,958 perform the same cleat restraining or detaining action in substantially the same way as defendant's so-called detent or restraining lever 36, except that in the defendant's machine the detents are so located that they are successively encountered by the several cleats of the same blank as they approach the stapling point.

[fol. 608] X Q. 31. Are there in any of the patents in suit any such restraining lever or detent as in defendant's machine?

A. No. In the plaintiff's patents in suit the workholder has a series of restraining springs one for each cleat.

X Q. 32. Will you refer to them by reference?

A. They are shown at 15 in Figs. 1 and 7 of patent No. 1,128,144 and also in the correspondingly numbered figures of patent No. 1,128,252.

X Q. 32*a*. If you find any reference in any of the patents in suit to any restraining or detaining function described to these springs 15, please read it into the record.

A. The patent in suit No. 1,128,144 refers to the function of the springs 15 beginning at page 3, line 34, saying:

"In order to hold the cleats firmly in the channel and against the outer flange of the cleat bar so that the cleats will register with the edges of the sheets, and to prevent wobbling of the cleats and possible displacement, we provide cleat springs 15," etc.

A similar statement occurs beginning at page 2, line 77, of the method patent in suit No. 1,128,252. In thus holding the cleats in place and preventing their possible displacement, these springs exercise their restraining office.

X Q. 33. Yes, but this refers to sidewise displacement and not endwise displacement; isn't that true?

A. No: it refers to any displacement.

X Q. 34. How can there be any endwise displacement in view of the fact that the spacer blocks are present for that purpose and are clearly so shown, for example, in Fig. 5 of the workholder patent 1,128,144?

A. In every line of practical manufacture there are what are known as "tolerances." Even in the most refined man-

ufacturing, some leeway is permissible and provision is made for it. It is practically impossible in extensive commercial production to always secure exact uniformity. Accordingly, it is a universal practice to provide "tolerances," that is to say, permissible variations from a standard dimension. This is increasingly true as the product becomes less refined. More tolerances are provided for in woodworking as compared with metal working, for example; and the cheaper the product the greater the tolerances.

Wirebound boxes are a crude manufacture. They are produced from cheap materials in a cheap way.

The drawings illustrate an ideal condition in which the [fol. 609] maximum length of permissible cleats is illustrated. To require all the cleats to be made of this maximum ideal length would be to put these boxes in the same category as astronomical lenses.

Accordingly, in practical manufacture it is inevitable that many cleats will be shorter than the maximum and such cleats will be restrained by the springs 15 from longitudinal displacement.

In the patents in suit, the springs 15 are fastened to and move in unison with the workholder.

X Q. 36. Now suppose one of these cleats is too short, does the spring hold the cleat in contact with the spacer block at the front end or the rear end of the cleat or does it leave it where it finds it?

A. It is the duty of the workman to put the cleat in place with its end against the following spacer block, and if the cleat is a short one the spring will maintain it in this position against the jars incident to the intermittent movement of the workholder through the machine.

X Q. 37. In other words, the springs 15 hold the short cleats just where they find them.

A. Hold them just where the workman has placed them.

Referring to Rosback patents 608,796 and 614,348: The Rosback patent No. 608,796, Fig. 2, shows three pushers on each chain, one on the top run and two on the bottom run, but, as this figure is broken away in the middle, the chains may be long enough to have a larger number of pushers. In this connection the specification, page 4, line 77, says

"each feed chain is provided at stated intervals (in the present machine nine feet apart) with stops or cleat and sheet engaging projections H[c]," etc.

Accordingly, the number of pushers would depend upon the length of the machine and the length of the chains.

By reason of this organization, when a blank has been finished it is not necessary to wait for the chain to complete a circuit before a second set of long cleats and sheet material can be placed in the machine.

The Rosback patent 614,348 shows two pushers on each chain. As shown in Fig. 2, these pushers are located at opposite ends of the chain in the illustrated position. The left-hand pusher has just finished its job while the right-hand pusher is approaching the place where it can begin to do its pushing work. If this right-hand pusher were omitted then the machine could not resume its useful work until the left-hand pusher had returned on its idle lower [fol. 610] run to the right-hand end of the machine. In other words, the machine would be idle half the time were it not for the provision of the two pushers on each chain.

X Q. 39. Then in each of these Rosback patents there are enough cleat pushers to produce defendant's alternate cleated blank assuming that the pushers are properly positioned on the feed chains; isn't that true?

A. No. For example, take the Rosback patent 614,348 and place its two pushers on each chain sufficiently close together to act upon alternate cleats both of the same blank, then the very purpose of Rosback's two pushers on each chain would be wholly defeated, since then the machine would be idle half the time until the two pushers had traveled along the idle lower run of the chain.

The same would be true in connection with the Rosback patent 608,796, since to shift the pushers of that patent from their positions far enough apart to introduce the longest blank so that the two pushers on each chain might act upon short alternate cleats entering into the same blank would be to give a long idle run to the machine.

Accordingly, the pushers of either of the Rosback's patents would be improperly positioned to achieve Rosback's result if rearranged in the way you suggest.

X Q. 40. You have talked about the purposes when I inquired about numbers. Perhaps we can get at it another way. How many cleat pushers are required in defendant's machine on each feed chain for a single blank when made according to defendant's alternate cleated method?

A. Two. Also, defendant's machine has enough groups of these pushers on each chain so that the machine does not have to remain idle while the chains are traveling on their return run beneath the machine.

In other words, in practicing the alternate cleat method the defendant's machine has twice as many pushers as a Rosback machine of the same capacity.

There are in each of the Rosback machines mentioned at least two pushers for each feed chain.

X Q. 42. If one of the cleat pushers in the Rosback machines in the patents mentioned on each cleat chain were moved to the proper position on that chain, the machine would then be in condition to make one of defendants alternate cleated blanks, wouldn't it?

A. Of course, when you use the word "proper" in this question and the word "properly" in X Q. 39, you are introducing function and purpose as well as structure.

Now, to move one of the Rosback pushers to a position [fol. 611] never contemplated by Rosback and for a purpose which he never suggested, and at the same time destroying the purpose for which Rosback used more than one pusher on each chain, is an improper position so far as Rosback is concerned.

Of course, if you tell a mechanic the new result which you want to accomplish and how it is to be done by so positioning pushers for alternate short cleats to go into the same box in proper foldable relation, then, I think that what the mechanic would do would be not to destroy the utility of the Rosback pushers by shifting part of them so as to slow down the machine and destroy Rosback's purpose but add other pushers in the instructed positions so as to act upon alternate short cleats going into the same box in proper foldable relation.

X Q. 43. To put it colloquially Rosback had all "the makings" for producing defendant's alternate cleated blank but it was necessary in order to do so to shift one pusher on each chain to a different position on that chain?

A. On the contrary, I would say the exact opposite. Certainly a constructive alteration of the Rosback machine so as to render it idle half of the time does not exhibit "all the makings." Moreover what is of most importance is that Rosback lacked the "know how."

For example, let us test this proposition in connection with Rosback patent 608,796, and assume that each chain has three pushers, as illustrated in Fig. 2.

We will now tell our skillful mechanic that we want him to change two of these pushers from where Rosback shows them so that they will be sufficiently close to the remaining pushers (one on each chain) so they will be properly located apart lengthwise on each chain to act upon two short alternate cleats which are to go in the same box in proper foldable relation, and that the mechanic has done so. The result would be that the machine would be unnecessarily idle one-third of the time (which was what Rosback wanted to avoid by his plural pushers on each chain); and in addition when the next set of single pushers came along, they would only be useful in making Rosback's long cleated, long sheeted blank. In other words, the machine would be idle one-third of the time when it ought to be at work, and in alternation the machine would make the defendant's blank and the Rosback blank. That is to say, the Rosback machine would have to be marred to produce the "makings" of the question.

X Q. 44. Then your position is that Rosback did not have "all the makings" because nobody told him to shift the [fol. 612] position of one of the pushers on each chain, is that it?

A. I prefer my own statement of my position. I think that Rosback would have strenuously objected to anybody's destroying the utility of his machine, by removing any of these pushers, where they performed his intended useful office to another position where that useful office would be destroyed and for a purpose which Rosback did not understand.

X Q. 45. What mechanical elements are needed to be added to Rosback to produce defendant's alternate cleated blank?

A. Sufficient additional pushers located with respect to each other so as to handle the individual cleats and side

sheets in such a way that they will be assembled in proper foldable relation.

X Q. 246. And a sufficient number would be one extra cleat pusher on each feed chain for each blank; isn't that so?

A. Yes.

X Q. 47. Do you consider that any machine which will position the cleats and sheets relatively for an eight-cleated wirebound box-blank would embody the teachings of the patents in suit?

A. I do not know. I would have to know more about the machine. I do not want to suggest the impossibility of getting up a machine to make an eight-cleated wirebound blank in a way not contemplated by the patents in suit.

The Rosback machine will not make an eight-cleated four-sided blank for a box, so far as I have any knowledge or information. Certainly no such information is given in any of the Rosback patents.

X Q. 49. If a man made a Rosback machine and added to each feed chain an extra cleat pusher in position to push the second cleat in each guide, it is your position, is it, that he would be following the teachings of the patents in suit?

A. He might not at all be following them. So far as your question goes he might be still using a single side sheet or one made up of different pieces having no relation to the size of the finished box, and, so far as your question goes, the two cleats at each side need not bear any foldable relation to each other, but simply might make up between them the same length as one of Rosback's long cleats. The completion of the blank would then be made in Rosback's way by cross-sawing and scoring.

[fol. 613] X Q. 50. If a man made a Rosback machine and added to each feed chain an extra cleat pusher in position to push the second cleat of an alternate-cleated blank in each guide, it is your position, is it, that he would be following the teachings of the patent in suit?

A. Not at all. For example, you say nothing at all about cleats being preformed of the right length for the side of the completed box to which they belong; nor do you say anything about the use of preformed sheet material which requires no operation subsequent to the stapling to determine their size for the sides of the box so that [they] may fold at once into proper position.

So far as your question goes, alternate cleats may require subsequent sawing to bring them into foldable relation and into the right lengths and a single sheet of side material may be used which requires subsequent scoring in accordance with Rosback's teaching.

X Q. 51. The Rosback patents are the only one's aren't they, in the prior art as far as you know that teach the idea of using a long stiff cleat and then sawing it up after it is attached to the sheets?

A. Understanding by the "Rosback patents" you include those of Knudtson, Uhri and Flora, to which I have previously referred. I know no other patents of other inventors which proceed in this manner.

X Q. 52. Are you treating Flora as a prior art patent?

A. At least, the Flora filing date of April 7, 1904, is earlier than the filing date of any of the patents in suit, although the Flora patent did not issue until November 22, 1904, whereas the applications for two of the patents in suit were filed in October, 1904, and the method patent purports to be a division of an application filed in October, 1904. I have assumed that the Flora patent represents an earlier invention.

X Q. 53. The natural if not the universal way, practically speaking, to make a box or any other structure for that matter, is to prepare the materials and then fasten them together, isn't it?

A. Yes. And if we take such patents as the Archer British patent 4,793 of 1899 or Howenstine 453,479, we are bound to assume as practical men that the cleats and sheets were prepared before any start was made to assemble the parts.

X Q. 54. This term preformed cleats apparently has been coined for the purpose of this litigation, wouldn't you say so?

A. I have never investigated the history of the word but it seems to be a very adequate and concise way of distin- [fol. 614] guishing such cleats from those of Uhri, Rosback, Knudtson, Flora which were formed into shape after the side sheet material had been stapled to the cleats.

X Q. 55. It is a very new term for a very old idea, isn't it?

A. It is an old idea. As to the antiquity of the phrase I am not qualified to say.

A wirebound box is produced if you practice the methods of the method patent in suit. I can point to it in a patent other than the patent in suit. It produces a box like that shown in the Inwood & Lavenberg patent 799,854, September 19, 1905, subsequently reissued November 26, 1906, No. 12,725.

X Q. 58. If it produces anything else than that please state what it is.

A. I think the method could be used and is contemplated to be used to produce wirebound boxes which need not have all of the details shown in the box patent No. 799,854 and its reissue and which in some respects differ therefrom.

For example, the box patent shows step-mitered cleats and the method might be employed with other sorts of cleats.

Again, the box patent shows a single reinforcing wire along the middle of the box side. The method could be carried out without the presence of this intermediate wire or more than one such wire could be employed.

The box patent shows that each side sheet overlaps cleats attached thereto at both ends. The method could be used in making a box which did not have this specific feature.

Again, the box patent shows a box which is square in cross-section. The method might be employed in making a box which is oblong in cross-section.

In accordance with the method patent it does not seem necessary to produce a blank in which the cleats are stapled to all four of the side sheets.

These are among the departures permissible in practicing the method of the method patent which would produce a box that is not identical with that shown in the box patent.

I can think of other variations coming within the teachings of the method patent in suit as I understand them. For example, the box patent illustrates the box as having at least one end and the method could be used in making a box having no ends at all. No others occur to me at the present time; other possible variations may be permissible [fol. 615] which do not at the present moment occur to me.

X Q. 61. Looking at the expired reissue patent 12,725, what would be the natural way to make it? By forming the parts first and then fastening them together, or applying long cleats and then cutting them?

A. I have already fully gone into this matter during my cross-examination in the Gibbons suit, and that cross-examination has already been incorporated, I understand, in the record in the present case. I have no objection to putting this matter a second time into the record, but I think it should suffice to call attention to my answers to X Qs. 156 to 168, inclusive, in the Gibbons suit which has already been incorporated into this record.

X Q. 62. I don't think you have ever answered the question I am now asking and would be glad to have an answer.

A. I should suppose that the first way which the inventors would have adopted after they had got the idea would be to make the box up wholly by hand, using a hammer to drive the staples, and making it up by hand they would doubtless preform the cleats and the sheets and also cut off wires of proper lengths.

This would enable them to determine the qualities and characteristics of the completed box.

Assuming that they were satisfied with the box for which there would be a commercial demand, they would then look about for a rapid way of making it.

There was in existence at the time of their invention, assuming that time to be the latter part of 1904, patents illustrating the machines of Rosback, Uhri, and Knudtson.

I should suppose that the natural way to do would be to try and use the existing methods and machines to make the box.

Accordingly they would proceed naturally in the way I have described in answer to X Q. 168 in my prima facie deposition in the Gibbons suit, which is already in the present record.

Obviously, if the existing methods and machinery were adequate, it would be unnecessary to devise any other method or go to the expense and labor of developing a different machine.

X Q. 63. It is true, isn't it, that in defendant's machine there must be a feeding action of the feed chains in order to produce a positioning of the cleats?

A. Of course this is somewhat of a conjecture on my part, subject to qualification if a demonstration should [fol. 616] prove otherwise, but it seems to me as though

defendant might produce its box by keeping his chains stationary and moving along the stapling mechanism, the detents, and the hold-down which overlies the sheets. I should think that that reversal would produce the same result, although mechanically less desirable because of the greater mass that might require to be moved. Even as to that I should have to consider possible mechanisms more closely than I have.

It seems obvious to me that defendant's machine could be reorganized without invention in such manner that the feed chains would stand still and the rest of the machine would travel relatively to them. It is true that in defendant's machine there must be a feeding action in order to produce a positioning of the cleats. There must be a relative feeding action between the blank parts and their holder on the one hand and the co-operating mechanism on the other.

X Q. 66. But with the workholder of the patent in suit, no such relative feeding is either necessary or possible, is it?

A. It must take place. If there were no feeding there would be no work done.

X Q. 67. You are not answering the question. The cleats are positioned in the patented workholder without depending on any feeding action, aren't they, and they can be properly positioned regardless of whether they are ever put into the stapling machine or not?

A. Yes.

By using the workholder of the patent in suit, the wire attaching and stapling process could be performed by hand, and the parts would possess their proper foldable relation.

In using defendant's machine, it is not necessary for the stock-feeder to exercise any particular care in placing the cleats in the guides so long as he places one in each guide in advance of each cleat pusher.

X Q. 70. It is true, isn't it, that the Rosback machines have feed chains with pushers on them, channels in which the cleats rest, and means for holding the cleats in correct position when the initial staples are driven?

A. I suppose by "correct position" you mean that both cleats and the overlying sheet were so presented that when the initial staples were driven they would enter the sheet

material on both sides and also the front ends of the cleats beneath. Accordingly, I answer in the affirmative.

In the defendant's machine, if the cleat guide were taken [fol. 617] away, it would totally disorganize the machine and render it useless.

In order to carry out the teachings of the Rosback patents, for example, Rosback No. 608,917, see Fig. 37, it is necessary to have the wires project beyond the ends of the end cleats.

X Q. 73. Therefore, in the Rosback method, it was necessary, wasn't it, to space two successive blanks at least far enough apart to afford enough wire at the ends of the blank to enable the wire ends to be twisted together?

A. I should not call it necessary but it would be a desirable way of accomplishing the result.

X Q. 74. If the pushers were so placed on Rosback that the front edge of one sheet contacted the rear edge of the sheet ahead of it, there would be no wire left over, would there, to be twisted together?

A. That would depend upon how the workmen proceeded. For example, in accordance with the Rosback method the cleats are longer in the blank than they are in the completed box; after the blank has been made the shaping of the cleats at the ends of the blanks is accomplished as well as cutting the cleat lengths across in appropriate shape and in scoring the sheet. In this way, provision may be made for the necessary projection of the ends of the wire.

A second way would be this, assuming that successive blanks are fed along as close as it is possible to do so, it will be noted that the end of one blank will not come in contact with the preceding one but there would be the pushers for the first blank between the neighboring ends of the two blanks so that a gap necessarily exists.

Now, assume that after the last staples had been put into the first blank and before any staples had been driven into the next following blank, one of the workmen could move the completed blank and pull it along sufficiently far before cutting the wires so as to leave ample wire between successive blanks to serve for twisting the wires together in completing the wirebound character of the box.

I might call attention to the fact that in the Rosback patent 614,348 the condition suggested in the question could not exist.

X Q. 75. You have thought up different ways that no box-maker would employ, but evidently you have overlooked Fig. 34 of Rosback 623,258 in which the uncut blank is shown and the wires extend beyond the ends of the uncut cleat. The fact is that any box-maker using the Ros- [fol. 618] back machine would space the cleat pushers far enough apart to leave a space between the front end of one blank and the rear end of the preceding blank; isn't that so?

A. Please note that the condition of your preceding question was suggested by you and not by me. You put the case to me and I showed what could be done. I had already told you in answer to the preceding question, X Q. 73, that the desirable way was to keep successive blanks far enough apart to provide ample space for projecting wires and in the next preceding answer I pointed out that this was necessary in connection with the Rosback patent No. 614,348, where, as shown in Fig. 2, it would be impossible to use blanks of such length that the front end of a second blank would be close to the rear end of the blank in advance.

It is true that in Rosback the desirable way was to keep successive blanks far enough apart to provide ample space for projecting wires, and the only possible way in the machine of his patent No. 614,348.

X Q. 77. One of the outstanding features of the stapling machine patent in suit is that it is a guideless machine, isn't it?

A. Yes. Please look at my answer to X Q. 57 in the Gibbons suit, already in the record, where you ask the same question.

X Q. 78. You have stated in your direct deposition, as I understand it, that defendant's expert witness, Mr. McElroy, has given it as his opinion that Inwood and Lavenberg followed the teachings of Rosback. You do not so understand Mr. McElroy's deposition, do you?

A. I do not recall having made any such statement and I should like to have it pointed out.

X Q. 79. This is the way that I have interpreted pages 4, 5, 6 and 7 of your typewritten deposition.

A. Certainly I do not say so on any one of those pages and where I have referred to Mr. McElroy's position with reference to plaintiffs' patents I have called attention to his own answers which I have substantially paraphrased. Moreover, on these pages of my deposition there is no mention of the Rosback patents.

X Q. 80. It is your understanding, isn't it, that Mr. McElroy's position is that defendants are following the prior art and not that Inwood and Lavenberg followed it?

A. Certainly. And in the portion of my deposition to which you have referred I do say that Mr. McElroy says that defendant's machines follow the prior art patents and the Rosback patents. But I have made no statements there [fol. 619] that Mr. McElroy in referring to the plaintiffs' patents has asserted any resemblance to the Rosback patents.

X Q. 81. Pursuing the subject of yesterday about your interpretation of Mr. McElroy's position, you say in paragraph 59 of your deposition:

"I see no possible basis for the contention that the teaching of the Rosback patent No. 614,348 (mainly relied upon by Mr. McElroy) contributed anything toward the invention of the Inwood and Lavenberg machines."

Whose "contention" did you refer to?

A. I here had particular reference to the statement made by Mr. McElroy on printed page 63 of the record in the United States District Court in the Gibbons suit (which I understand has been introduced into this case), where in referring to the Inwood and Lavenberg patents Nos. 1,128,144 and 1,128,145, he said:

"Furthermore, such of the claims as in their terms describe defendant's structure define nothing substantially different from the prior art structures, such as that of the Rosback patent No. 614,348, if said claims be construed broadly enough to cover the radically different structure employed by defendant, which follows the teachings of said Rosback patent rather than those of the Inwood and Lavenberg patents in suit."

Assuming that the Inwood and Lavenberg patents are to be construed broadly enough to cover the structure em-

ployed by defendant, I understand that Mr. McElroy here takes the position, in the quoted paragraph, that the claims then define nothing substantially different from the prior art structures, such as Rosback 614,348; and, if so, I think that the conclusion would be justified, at least so far as the claimed subject-matter was concerned, these Inwood and Lavenberg inventions would be obvious developments of the Rosback machine. If, however, my understanding of the quotation just made from Mr. McElroy's testimony is incorrect, then I will withdraw paragraph 59 and the first sentence of paragraph 60 of my present deposition.

X Q. 82. Well, but that paragraph you have quoted from the Gibbons case practically says, doesn't it, that defendant is merely following the prior art and hence if any of the patents in suit had claims broad enough to cover [fol. 620] the defendant, they are ipso facto directed to old matters?

A. Yes, but I would put it around the other way.

We are in agreement that I understand Mr. McElroy's position to be that defendant is merely following the teachings of the prior art rather than that the things shown in the plaintiffs' patents are all shown in the prior art, and with this qualification, it seems to me that Mr. McElroy's position is that whatever there may be in common between the defendant's machine and the Inwood and Lavenberg machine, that that subject-matter is in the prior art. Mr. McElroy's position is that the prior art justifies anything and everything that is done by the defendant and not that the prior art shows everything disclosed and claimed in the plaintiffs' patents.

X Q. 85. Your deposition on rebuttal as originally handed to me showed the venue as of the District of Columbia, and the deposition stated that you had been sworn before the deposition was handed to me. That was not true, was it?

A. No. I did not acknowledge the deposition until Tuesday morning of this week here in Chicago.

X Q. 86. And that was after a copy of the deposition had been submitted to me, including the pages 91 to 115 which were withdrawn?

A. Yes.

X Q. 87. Please refer to paragraph 32 of your direct testimony. You say that the resulting rearward pull by the wire (in plaintiffs' patented machine) assists to keep the rear ends of the cleats in contact with the positioning blocks behind them, thus insuring the maintenance of the cleats in their proper relative positions with their rear ends located against the respective positioning blocks. Do you wish to correct or modify that statement?

A. To be strictly accurate and to avoid possible misunderstanding, the last sentence of this paragraph should read:

"The resulting rearward pull by the wires assists to keep the rear ends of the *two advance* cleats in contact with the positioning blocks behind them, thus ensuring the maintenance of *these* cleats in their proper relative positions with their rear ends located against the respective positioning blocks."

The difference between this sentence and that in paragraph 32 is indicated by the italicized words.

It is true, as stated by me in substance yesterday, that in the plaintiffs' patented workholder, if the second, third [fol. 621] and fourth cleats on each side are shorter than intended and should be out of place longitudinally, they will remain out of place. In plaintiffs' patented workholder the contemplated action is for the spacer block to properly position the cleats endwise. And if the cleats are of the length contemplated by the patent, there will be no necessity of feeding the workholder through the machine to properly position the cleats in the workholder. In defendant's machine, if the cleats are misplaced in the cleat guides, they will not assume their proper positions relative to the other parts of the blank until the feed chains have moved along sufficiently to bring the pushers thereon into contact with the cleats.

Referring to paragraph 33 of my direct testimony, the patents in suit nowhere show or describe two blanks connected by the wires.

X Q. 93. On the subject of foldable relationship of the parts of the blank, in both Lipps & Springer No. 801,998 and in Greenstreet, No. 722,423, the parts are wired together in predetermined foldable relation, are they not?

A. I think not. Take the Greenstreet patent, No. 722,-423, what it shows is a series of slats connected together by wires and stays for the purpose of forming "a long or continuous sheet or fabric, which may be cut into lengths, each adapted to form the sides, top and bottom of the boxes," etc. (page 1, line 42). With such a slatted fabric there is no predetermination by the fabric itself as to what the subsequent characteristics of the box as to size and proportions are to be. With this fabric, if a workman is to make a box of a particular size and proportion, he would measure off the necessary length of fabric and then fold it into the desired box form.

In one sense there is a predetermination, that is to say that the corners of the box can occur only along gaps between adjacent slats so that there is a limitation imposed regarding the dimensions of the sides of the box. That is to say, each side of the box must be an aliquot multiple of the distance between slat centers.

In other words, an inspection of the fabric would not indicate either the size or proportions of the box to be made.

I understand that the same is true of the Lipps & Springer patent No. 801,998, from which I quote beginning at page 7, line 14, as follows:

"The operations above described are continued as the shaft 22 revolves and the connecting strips or slats may be made in any desired lengths or may be run continu-[fol. 622] ously through the machine and afterward cut into any suitable lengths."

X Q. 94. The effect of your answer is that in Greenstreet and Lipps and Springer the side material must be selected and wired together in a predetermined manner depending upon the dimensions of the box ends to be used and in that sense there is a foldable relation necessary in the blank prior to the formation of the completed box; isn't that true?

A. I certainly did not intend that conclusion from what I said. I intended to convey the exactly opposite meaning. If one examines an ordinary woven fabric, he cannot tell what garment the tailor is to make from it. So

if an indefinite length of slatted fabric should be woven by Greenstreet or by Lipps and Springer no one could tell the sort of box that the box maker was going to make from it, except that each side of the box must be composed of an aliquot number of slats.

For example, suppose that a piece of the slatted fabric of either of these patents should contain 24 slats. The box maker might make a twelve-sided box with two slats on each side; might make an octagonal box with three slats on each side; might make a hexagonal box with four slats on each side. He might make various quadrangular boxes within the limitations of twenty-four slats, such as a box having a bottom composed of four slats, a top composed of four slats and the other two sides of eight slats each, or as another illustration, a box having five slats in the top and bottom and seven slats on each side. In other words, there is nothing in the fabric to dictate the shape and proportions of the box.

X Q. 95. You certainly cannot feel that an answer like that is helpful to the court in deciding the merits of this controversy, when my inquiry is directed toward the teachings of these specified patents and assuming, of course, ordinary manufacturers' intelligence at the time these patents were made public. The Greenstreet patent for example, shows the box end, shows the fabric, and shows the fabric applied to the box end. I will now ask you to assume that at the time of Greenstreet and Lipps and Springer a manufacturer before he started to make anything had a pretty definite idea of what he wanted to make, and that he didn't first make a fabric and then decide what to do with it. And with these assumptions, I will again ask you whether it is not true that in Lipps and Springer and Greenstreet it was necessary that the blank [fol. 623] which was to form the side material for the box had a definite foldable relation relative to the ends of the box so that the blank or fabric could be folded around the ends of the box in completing the box.

A. I entirely disagree with you.

I think my preceding answer is very helpful to the court as it shows exactly what Greenstreet contemplated. I have already quoted from Greenstreet patent No. 722,423 that Greenstreet proposed to make a slatted fabric in a long continuous length and then cut it up for the purpose of

making any kind of a box, of course, with the limitation that each side of the box must be composed of whole slats.

In the particular box which Greenstreet illustrates having seven slats on each side and an extra slat used in closing the box, the dimensions of the box are not determined by the fabric but by the particular box ends with which the fabric is to be used, the continuous length of the fabric being severed to provide a length suitable for the particular box which is to be made. That is exactly what the patentee teaches.

X Q. 96. That is simply a different way of saying, isn't it, that the box ends being given, the blank or fabric must be so constructed that it would fold around the box ends?

A. No. On the contrary, the box end must be selected so that the fabric can be used with it just as the tailor must cut his coat according to his cloth.

X Q. 97. Do you think a manufacturer, for example Greenstreet, would first make the fabric and then make the sizes of his boxes conform to that fabric?

A. To this extent, yes. What Greenstreet contemplates is making a slatted fabric. A box maker takes this fabric and makes boxes out of it which boxes may be of any shape and proportions that the box maker wants, his only restriction being that each side of his box must be composed of whole slats.

X Q. 98. Why do you say that Greenstreet contemplates "making a slatted fabric" when he shows a box and the very title to the patent is "Box or Package and Material Therefor"?

A. He selected a very happy title for his idea. Indeed a package can be formed from his fabric in which the fabric would constitute a protective covering for the goods enclosed and of no definite geometrical shape.

The slatted fabric which he makes is adapted for use both in making boxes and other packages which do not fall within the customary category of boxes.

[fol. 624] I know that it is and probably always has been customary for box makers to have standard sizes of products.

X Q. 100. And we may assume, may we not, that Greenstreet contemplated this practice and had box ends of standard sizes to which he would apply the fabric?

A. That is certainly true of the Greenstreet patent No. 547,486, October 6, 1895, in which a slatted blank has extra thick slats at the corners of the box. In the case of this patent the slatted blank is manufactured with special relation to the size and proportions of a particular box.

And I would say that in this Greenstreet patent No. 547,486 the side material is wired together in such manner that it will be foldable around the box ends.

X Q. 102. And isn't the same principle true in the Lipps and Springer patent 801,998?

A. Certainly not to the extent of the Greenstreet patent No. 547,486. In the passage from this Lipps and Springer patent which I have just quoted in answer to X Q. 93, Lipps and Springer contemplate either running their machine continuously to make a fabric of indefinite length and afterwards cutting it into suitable lengths. They also say that the connected strips and slats may be made in any desired lengths and I presume that a particular desired length might contain such a number of slats that it could be folded in only one way.

X Q. 103. It is fair to assume, isn't it, that Greenstreet and Lipps and Springer determined on sizes of box ends before determining upon the size of the slats and the spacing?

A. That would be true of the Greenstreet patent No. 547,486, at least to a certain extent. For example, the particular box shown in this Greenstreet patent contains twenty-nine of the illustrated slats. Had Greenstreet had wider slats, he would have had fewer of them for this particular box. If he had had narrower slats, he would have had more of them for this particular box.

In the other Greenstreet patent No. 722,423, I do not think Greenstreet had any particular size of box in mind in selecting his slats. Quite the contrary, what he had in mind was making a slatted fabric which could be then cut up by a box maker in accordance with the size, shape and dimensions of the box or package that he wanted to make, always, of course, with the restriction that if he wanted to avoid breaking a slat his box sides would have to be aliquot multiples of slat widths.

Lipps and Springer had this same idea with the addition [fol. 625] that they contemplated making the slatted fabric of particular lengths to suit particular boxes.

X Q. 104. You don't mean to say, do you, that it would be a mere matter of choice as to whether a box maker making the Greenstreet device should "avoid breaking a slat"?

A. I should think he would want to avoid breaking a slat.

X Q. 105. But you don't think it would make very much difference whether he had to break a slat or not to fit the box end?

A. As I just said, I should think he would want to avoid doing so, and hence, I repeatedly said that in using the Greenstreet fabric he would be limited in making the box to sides which were aliquot multiples of slat widths. I think I must have said this at least a dozen times today.

X Q. 106. If you had answered correctly, once would be enough. You know perfectly well, don't you, that to qualify as a practical and commercial box maker conforming to standard sizes of box ends that Greenstreet and Lipps and Springer would have to take into account beforehand the width and spacing of the slats so that the slats could be folded about the specified box ends without breaking the slats?

A. I think this would be true of Greenstreet No. 722,423, but only to a very limited extent. Greenstreet was making a slatted fabric for general use. A box maker to use his fabric would have to conform to his fabric. The box maker might want to make some unusual shape of box such as a hexagonal one or octagonal one. Also Greenstreet intended his fabric for general packaging purposes. It might be used in baling materials of uncertain contours.

Of course, with regard to the Greenstreet patent No. 547,486, I have already said that the blank is made up in a particular size for use with a particular box and Lipps and Springer say they may do so.

X Q. 107. The side material of Greenstreet 547,486 would be useless for the purpose illustrated in the Greenstreet patent if the slats were not wired together in predetermined foldable relations; isn't that so?

A. Yes.

X Q. 108. In Howenstine 453,479 the parts are assembled in foldable relationship are they not?

A. Unless the order of description in the Howenstine specification is to be understood as indicating his mode

[fol. 626] of procedure, there is no description of the way in which the box is made.

If the order of description of Howenstine is to be regarded as setting forth his method of manufacture, then the procedure would be as follows:

Start with the front and rear sides and the bottom of the box preformed to the desired shape.

Make the stiffening rods of the right length, each with a hook at one end and a hinge eye at the other.

Staple these rods to the two sides of the box.

Bend the rods and turn the front and rear sides up parallel with each other.

The preformed end walls are then inserted between the front and rear sides, being set a short distance from the ends of the side walls "to permit the battens i to be located on the end walls," as stated at page 1, line 100.

The three battens (i. e. cleats) previously formed are then put in place.

All three battens are then stapled at each end of the front and rear sides and bottom of the box and the vertical battens are stapled to the end walls.

The cover or lid is separately made out of preformed stiffening rods, cleats or battens, staples and hooks, each having a handle extending out through its slot at each of the top cleats.

The lid is then hinged to the bottom section of the box.

Assuming that this is Howenstine's method of manufacture, then the preformed stiffening rods with their bent ends and hinge eyes would be fastened to the two sides and bottom of the box before the folding took place and at this stage the stiffening rods and the two sides and bottom united thereto would be in the form of a blank with the sides in foldable relation to each other. To this extent, I answer the question in the affirmative.

X Q. 109. In the Gibbons case in which you testified, nothing was said about the detents which are marked 36 in the present exhibits of plaintiffs', Nos. 8, 9, 12, etc. Was there?

A. So far as I recall, the only references to any devices having any of the functions of these detents are my reference to the even numbered side sheets having no cleats underneath them, with straddling staples driven therethrough,

and clinched on the underside thereof, in numbered paragraph 28; and also my reference to the Craig patent No. 1,208,297 as being generally similar in procedure to the Gibbons machine. The Craig patent 1,258,989 illustrates anvil levers at 78 in Figs. 6, 10 and 11, which are described as being pressed outwardly by the cleats at page 5, line 3, [fol. 627] of the specification, there being a spring 80 (shown in Fig. 6) which holds this anvil end 79 of the lever 78 "yieldingly in the path of the cleats," as stated at page 5, line 35. These devices of the Craig patent perform the offices of the detents shown in Plaintiffs' Exhibits Nos. 8, 9, 12 [ante, pp. 65, 68, 79]. Whether other witnesses in the case made any reference to this feature in the Gibbons case, I do not know.

X Q. 110. The word "detent" never came up in the Gibbons case, so far as you recollect, did it?

A. Not in my testimony at least.

X Q. 111. You did not regard these parts 36 as being any part of the teachings of the patents in suit, did you, in the Gibbons case?

A. No.

X Q. 112. Do you in this case?

A. Specifically, no.

X Q. 113. Please refer to paragraph 52 of your direct testimony. Please point out in Mr. McElroy's testimony where he said that the cleat positioning blocks of the work-holder patent in suit represent a mere duplication of the Rosback pushers?

A. I do not at present recall any place where Mr. McElroy made such a suggestion and in the absence of any present ability on my part to point out such suggestion by Mr. McElroy, I think the first sentence of this paragraph 52 should come out.

X Q. 114. Please refer to paragraph 71, you say

"But in this ultimate development in the patent of May 30, 1899, Rosback entirely discards the mechanical locating of the side material on the cleats."

Haven't you been in error in making that statement?

A. My meaning is explained in paragraph 73. If there is any error I should be glad to have it pointed out.

X Q. 115. The part g^2 determines the position of the sheet material with reference to the cleats, does it not?

A. It will be noted from Fig. 1 that the cleats X are longer than the sheet material Y and are shown projecting beyond the sheet material at both front and rear. Fig. 2 shows the rear end of one of the cleats with the pusher head $g^{\times}$ in contact with it, while the rear edge of the sheet material Y is shown at a distance from the head $g^{\times}$ with a space between them.

Regarding the feed of the sheets, the specification beginning at page 2, line 106 says:

"The sheets are held by the presser bars k in sufficient [fol. 628] frictional contact with the cleats owing to the extent of the rough contacting surfaces of the cleats and sheets, to be carried by the movement of the cleats. This frictional engagement not being lessened by the contact with the sheets of the bearing bars k, because their lower contact edges are very narrow and are or become by use polished to a degree which avoids any frictional resistance from them against the sheets."

I do not understand that Rosback intends that the projections $g^{\times}$ should come in contact with the rear edge of the sheet material.

Referring to Fig. 1 of Rosback 625,958, the upstanding flange of the guides B position the sheet and the cleats laterally. The Rosback patent 625,958 shows a pusher for advancing the cleats. And this cleat pusher positions the two cleats abreast of each other. Fuller in his patents 690,416 and 694,467, shows cleats and sheet material and mechanical means for relatively positioning them.

X Q. 120. In Healy patent 768,123 any workholder which would hold the parts of that blank during the assembly of the parts, would hold them in foldable relation, wouldn't it?

A. I suppose that a holder might be designed for parts of this Healy box excepting perhaps for the cleats 11 concerning which some difficulty might arise unless put on as a separate operation.

X Q. 121. It was common in the box art, wasn't it (see for example the Foster patent 309,297 for box nailing machine) to make workholders to hold the box elements in proper position while they were fastened together? I might refer also to the two Fuller patents mentioned a few moments ago.

A. In the two Fuller patents a crate lid or one side of the box has its constituent parts held in position during the securing of them together.

I answer affirmatively as to the Foster patent.

X Q. 122. Referring to Healy 768,123, it would be quite possible wouldn't it, to simply drive nails through the straps and sheets into the cleats?

A. So far as Healy's disclosure goes, I think that would be a matter of some difficulty. Each cleat must be in an exact position on the sides of the box when fastened thereto, this being especially important in connection with the pairs of cleats 12 and 11 which are to form the dovetail grooves to hold the ends of the box. I think it would be difficult to [fol. 629] drive nails in the way you suggest without danger of displacing the cleats.

X Q. 123. At any rate, it is merely a question of degree, isn't it, for example, if the straps were of ordinary tin there would be no difficulty in driving nails through them, would there?

A. I did not have this so much in mind as much as the circumstance that during the driving the cleats might be disturbed or displaced.

X Q. 124. Well, theoretically they might be displaced even if the straps were absent, mightn't they?

A. I should suppose that the way a carpenter would proceed to make a box like Healy's would be to take one side and accurately place one of the cleats on top of it and then, while he maintained these two parts in register with each other, he would drive his nails to secure them together. He would then proceed to locate and attach all of the cleats 12 in this way. This could be done either before or after the straps were secured to the sides.

He would either before or after securing the straps, accurately position the undercut cleat 11, using if need be, one of the ends 5 or 6 as an assistance in locating each cleat 11 preparatory to nailing it in place.

He would doubtless have his nails partly driven into his cleats before positioning the cleats so that he could hold each cleat in place while driving the nails to finally position the cleats.

X Q. 125. Why do you assume that the Healy box blank could be made by a carpenter? It is true, isn't it, that ma-

chinery was employed in the box making art long prior to the date of the patents in suit?

A. I do not know of any prior machine which Healy could have used in nailing his box. He makes no reference to any such machine or to any particular way for that matter for getting his box together.

X Q. 126. At least it is a fair assumption, isn't it, that Healy, if he was a practical box maker at the time of his patent and took advantage of the state of the art at that time, would employ a holder for holding the constituent parts of his blank in position during the process of fastening the parts together?

A. I am unable to conjecture.

X Q. 127. Proceeding on the same theory, you are not able to conjecture whether the box blanks of the reissue patent were made entirely by hand, or partially by machinery, or entirely by machinery?

A. I have no knowledge of how the box of the reissue pat- [fol. 630] ent of Inwood and Lavenberg, may as a matter of fact have been first made, although I have suggested several ways in which it might have been made.

I presume, however, that after Inwood and Lavenberg had gotten up their machine that they made the box by the use of that machine.

X Q. 128. At the time of the applications for the patents in suit, no manufacturer could hope to stay in business if he made his boxes by hand, could he? I mean in business as a box manufacturer.

A. I think not. That probably accounts for why Inwood and Lavenberg designed a machine.

X Q. 129. And if that probability is true, it is not a very difficult conjecture, is it, that Healy in making his blank of patent 768,123 could have devised a workholder without making any invention?

A. I know nothing of Healy's capacities.

X Q. 130. That wasn't the question. Was it not within the expected skill of a mechanic at the date of applications for the patents in suit and at the date of application for the Healy patent to make a workholder for the component parts of the Healy blank while they were being fastened together?

A. Show me the workholder and I may then be able to express an opinion. I am not familiar with it.

X Q. 131. Please re-read the question and see if you can't make a better answer than that.

A. Doubtless the best answer is to say, I do not know.

In the Healy patent 768,123 about which we have been speaking, a complete blank with its side sheets, cleats and metallic straps 7, 8, all assembled together in the flat are shown, with this qualification, namely, that they are also shown connected together in the flat. In other words, Healy shows a box blank completed prior to the folding around the end walls, with this qualification, namely, that he does not fold around the end walls. What he does do is to fold his blank into box form so far as the sides and bottom are concerned and he then slips his end walls into place in the dovetail grooves constituted by the associated cleats 11, 12, at each end of each side. Healy teaches the idea of attaching the cleats, sheets and binding strips together before assembling them with the box ends.

X Q. 135. That is quite a natural and logical procedure, isn't it?

A. I know nothing in nature that works that way. I think that it was doubtless Healy's intent in accordance with his disclosure to fasten his side sheets, cleats and straps together before he folded the resulting blank into box form [fol. 631] and before he inserted his ends into the dovetail grooves.

X Q. 136. There is no "think" about it, is there, in view of the fact that that is exactly the way he shows the blank in Figures 1 and 2?

A. I have just said in the preceding answer that my conclusion is based upon Healy's disclosure. My thought and the disclosure coincide.

X Q. 137. Is it your idea that a patent can teach anything more than what is contained in the written description?

A. If the patent has a drawing, as many have, the drawing must also be taken into consideration. The document must be taken by its four corners.

X Q. 138. Exactly, and for that reason anyone having the Healy patent before him and desiring to make the Howenstine box would naturally assemble the sheets, cleats and wires before attempting to add the box ends in the Howenstine box, wouldn't he?

A. When the Howenstine invention was made neither he nor the public had the Healy patent to go by. However, if there were any such thing as a natural way of making a box I should suppose it was the way which the inventor himself described so far as he did describe it. As I understand the Howenstine patent, he first fastens his front, back and bottom and hooked and eyed rods together; then folds them into box form and then inserts the ends in such places as to leave room for the cleats.

X Q. 139. Do you mean to say that you think the Healy patent teaches that the box ends should be secured before the cleats are secured in place?

A. As I have repeatedly said otherwise, I do not see any foundation for your question.

X Q. 140. Perhaps I have misunderstood your answers. Then evidently you agree with me that the natural and obvious way of making the Howenstine box would be to assemble together the sheets, cleats and binding wires just as Healy did and then apply the box ends.

A. On the contrary, Howenstine proceeds in the way in which I have stated in answer to X Q. 138. His disclosure is different from that of Healy. Healy has to put his cleats in first before he puts in his ends because his cleats are arranged in pairs on the sides of the box to form dovetail grooves into which the ends are to be slipped when the box is folded with its sides parallel. Accordingly, when Healy knocks down his box, as he contemplates, all he has to do is to slip out the ends. He is not obliged to draw out any nails or other fastening devices.

[fol. 632] Howenstine's procedure is entirely different. What Howenstine does is to make his three-sided box with hooked and eyed stiffening rods attached and fold it into box form. He then puts his ends in, taking care to set them in a short distance from the ends to permit the battens or cleats to be located on the end walls, and he then secures the three battens at each end to the front, back and bottom of the box by staples and he then at each end of the box staples the two vertical cleats to the end. When he wants to knock down his box, he draws out the staples connecting the cleats to the end walls as he describes in the passage beginning page 2, line 47.

I wish the court to understand that my interpretation of the Howenstine patent is that Howenstine assembles his

sheets, cleats and ends before fastening any of these three elements together. As I have already stated, the steps which Howenstine follows can only be arrived at by the order in which he describes his box. My opinion of his procedure is based upon his own order of procedure. He is entirely silent as to any other mode of procedure. It is not for me to conjecture any other procedure. If any other procedure is to be suggested, it should be put to me as a hypothesis and I may either agree with it or criticise as the case may be. If the patent is ambiguous, that is Howenstine's fault and not mine.

The descriptive matter in the Howenstine patent commencing page 1, line 98, is descriptive of both structure and method. Otherwise there is no description of method in the Howenstine patent.

X Q. 143. The Howenstine patent is for a "folding box" and not for a method, isn't it?

A. Yes.

X Q. 144. And therefore, it was sufficient if he described a structure and not a method of making it; isn't that so?

A. To this extent I will agree with you, namely, that the patents in suit here involved are for apparatus, machine and method. Accordingly, if all that Howenstine discloses is a box or a structure and there is no disclosure of method, machine or apparatus, it is wholly irrelevant. I had supposed that this Howenstine patent was put in evidence by defendant because of some supposed relevance to plaintiffs' method of making boxes. If the Howenstine patent contains no disclosure of a method, and that is the defendant's position, I am willing to withdraw all that I have said regarding the Howenstine patent.

As a general proposition, your statement of the question [fol. 633] is sometimes true and sometimes not true. A patent which purports to describe a certain article may be fatally defective because it fails to tell how the article is made. On the other hand, it may suffice to describe the article alone. It all depends upon the circumstance. Taking the specific patent of Howenstine, I think his disclosure of his box is sufficient.

X Q. 145. You need not withdraw anything as you have just offered because I want the court to see how far you are willing to go in order to make a partisan argument and how silly a method you are willing to see in the Howenstine

patent. Now assuming that anybody was foolish enough to try to make the Howenstine box by the method you state and to assemble the sheets, cleats and ends before fastening them together, he would have to hold in position at least three side sheets, three cleats and one end and hold them in their correct positions before applying any fastening device, wouldn't he?

A. No.

X Q. 146. Please give me your idea of how he would proceed.

A. With respect to the matter inquired about, Howenstine does not describe his procedure. If it is permissible for me to supply Howenstine's deficiencies, one way would be to proceed as follows:

Having got his front, back, bottom and rods connected together and folded into shape with the front and back parallel with each other, Howenstine then puts in his ends, spaces them far enough in to provide room for the battens. This preserves the rectangular form. As to each end of the box, he would then insert the bottom cleat. An advantage in doing this would be that this bottom cleat would not be positioned wrongly, since it would be prevented from endwise displacement by the erected side walls.

He would then insert vertical battens, fitting them down at their lower ends to the outer ends of the lower battens. He would know that he had the vertical battens correctly in position by observing the position of their upper ends with respect to the side walls and the box end. He would then turn the box over so that its normally upper portion would rest upon a solid support and he would then take care that there had been no displacement of the parts relative to each other.

This would bring the bottom cleat (now the top one) in position to be stapled and this cleat would be solidly held against the driving impact of the staple driver, which might be a hammer. During this driving he would not have to [fol. 634] hold onto anything else because the parts would sufficiently hold themselves together.

He would then turn the box over on one side and drive the staples into one of the cleats through the corresponding side sheet. He would then turn the box over on the other side and fasten the remaining cleat.

He would then drive the staples in so as to secure the box ends.

He could then take the other end of the box and proceed as before.

This procedure is entirely consistent with Howenstine's disclosure so far as it goes.

According to the procedure suggested by me, the bottom cleat would not be fastened to anything before he "turns the box over."

X Q. 148. If all these loose parts would stay in place by themselves it would seem superfluous to use a workholder for any kind of a wirebound box blank, wouldn't it?

A. I have been confining myself to what Howenstine discloses. I have not intended to say in this connection what the best way of making the box is. Howenstine does not disclose any workholder.

X Q. 149. Now that we have had your remarkable view as to what Howenstine discloses, I would ask you whether you would adopt any such method if you wished to produce the Howenstine structure but in addition to the Howenstine patent you had before you the teachings from all four corners of the Healy patent 768,123.

A. I am afraid that I did not make my last answer clear. I intended to convey the idea that the Howenstine specification was silent as to the exact steps to be followed in attaching the cleats. I gave a way of attaching the cleats entirely consistent with the disclosure which Howenstine makes.

Your present question asks me how I in 1925 would make the Howenstine 1891 box with the disclosure of the Healy patent of 1904. In the first place, I notice that the Healy box is not identical with the Howenstine box in any particular.

Take, for example, the way in which the end walls are inserted. Healy has to attach his cleats to the sides of the box before he inserts his ends because his ends fit into the dovetail grooves formed by the cleats and they are not stapled into the cleats.

On the other hand, Howenstine's end walls are stapled to the cleats. Accordingly, I would get no information from [fol. 635] the Healy patent which would assist me in making the Howenstine box.

I will read into the record lines 30 to 40 of Greenstreet patent No. 579,574, page 3:

"The machine, as shown in the drawings and here explained, is for making a shipping-case, the sides of which are constructed from a series of slats; but I am able to bind with wire and secure by staples tight boxes, that is, boxes the sides of which are made from one-piece material or one or more pieces to the side, the only change required being probably a difference in the spurs on the chains and in the absence of the feed-slides."

X Q. 151. In making a blank such as described in the paragraph just quoted, Greenstreet would be making a blank in which the parts have a predetermined foldable relationship; isn't that so?

A. In quoting from this same passage of this Greenstreet patent in paragraphs 221 and 222 of my direct examination I referred to this as a mere suggestion on Greenstreet's part since he refers to a change being "probably" required in his machine.

If he did proceed in accordance with this suggested procedure, he would make a blank in which the sides of the box were in proper foldable relation, especially since that is true of his complete disclosure in this patent.

It is true, in the patents in suit, that the springs and other positioning means do act "throughout the passage" of the blank through the machine. In the patents in suit, if the cleats should be shorter than the distance between spacer blocks, and the cleats should be out of their proper place, the springs 15 cannot put them back against the spacer block at the rear end.

X Q. 154. In the patents in suit, the cleats move forward without any friction whatever, don't they?

A. Yes.

X Q. 155. And in defendant's machine, the frictional retardation of the cleats is inherent in the machine and is essential, is it not?

A. Yes.

X Q. 156. We have touched this subject before, but I would like to refer to it again. That is, that the Greenstreet patents including 547,486 and 579,574, are concerned with positioning of the parts in foldable relationship as well as with feeding; isn't that true?

A. Yes.

X Q. 157. It is true, isn't it, that in defendant's machine [fol. 636] there are the same sheet pushers and they operate to position the sheets as in the Greenstreet patents just mentioned?

A. Yes.

X Q. 158. And the same thing is true in connection with Lipps and Springer 861,998, isn't it?

A. Yes, in the event that they make a blank for a particular box, as they suggest may be the case.

X Q. 159. I think you testified in effect yesterday that it is within the teachings of Lipps and Springer and the Greenstreet patents to make a box in which the length of the edge of a box end would be substantially equal to the width of the side material; is that correct?

A. Yes.

X Q. 160. And in that case also the constituent parts of the blanks of Lipps and Springer or Greenstreet would have a foldable relationship to each other?

A. Yes.

X Q. 161. In the patents in suit, there are no sheet spacers, are there?

A. No.

X Q. 162. The sheets are supposed to lie edge to edge?

A. Yes.

X Q. 163. Wouldn't it be a simple matter to make a workholder for holding the component sheets and cleats of the Healy box blank in the patent 768,123 providing a frame in which recesses are provided for positioning the cleats endwise and sidewise and upstanding projections rising above these recesses for positioning the sheet material in proper relation endwise and sidewise?

A. I think with your instructions that the work of making such a holder would be simple.

The Rosback machine of patent 608,796 has a workholder. The Rosback machine of patent 614,348 has a workholder. The workholder of this latter Rosback patent consists of guides B, the spring-upheld bars B', the chains F, the lugs F'.

Considering for example the Rosback patent 614,348, defendant has the following mechanical elements that Rosback does not have:

Additional pushers to act upon the individual cleats going into the same box, these additional pushers being located on the chains so that the two sets of pushers will be properly located so that the two sets of cleats will enter into the box in proper foldable relation. Also defendant's machine has the pair of detents located near the stapling point. Also specifically defendant's machine has a pair of pushers for each of the three advance sheets in addition to the pair of [fol. 637] pushers for the rear end of the last sheet.

X Q. 168. I thought that you and I had agreed during the course of your cross-examination that Rosback employs the same detents that defendant does, functionally at least, even though the shape may be a little different.

A. That was with respect to other Rosback patents and not 614,348. In the Rosback patent 614,348 the friction is secured by the springs which uphold the vertically movable guide bars B'. These spring upheld guide bars do produce a continuous friction throughout the progress of the material through the machine, but not the detents of the defendant's machine.

Considering Rosback 625,958, which has resilient members whose curved ends project into the guides into the path of the oncoming cleats: Except the additional pair of pushers, defendant's machine has mechanical elements not shown in Rosback 625,958. This particular Rosback patent has the cleat pushers for long cleats not intended to act upon the sheets but the sheets are supposed to be carried along by their frictional contact with the cleats due to the overhanging presser bar. Also, as I have pointed out, Rosback's several springs *d* impose friction on the long cleats throughout their progress through the machine as contrasted with defendant's detents which act only at the stapling point, and in succession on the short cleats. If we substitute for the word detent, the term restraining element, which I believe I suggested as also appropriate, then in a broad sense, Rosback's patent 614,348, in having the spring-pressed bar B'. has everything that defendant's machine has, except the additional pair of pushers on the feed chain. Of course, the two structures are quite different specifically.

I think the restraining element for the cleats in Rosback 625,958 represents a different idea of means from the restraining element for the cleats in Rosback 614,348.

But neither of these two forms of cleat-restraining elements are found in the patents in suit.

X Q. 173. In your summary of the prior art on page 87 on your typewritten deposition, that is, paragraph 248 of your direct, do you mean to say that all of the sub-paragraphs represent novel characteristics in the art or that plaintiffs' patents are novel because they group in a single machine all of these characteristics?

A. Both in part. I intended primarily to indicate that the several features were new in combination and it is also the case that I do not find that any prior art machine [fol. 638] contains any one of the characteristics indicated respectively in the sub-paragraphs 1, 3, 4.

Sub-paragraph 2 reads:

"2. Means to locate the separate rigid side sections in co-operative foldable relationship preparatory to the attachment of the wires."

The means provided in the patents in suit to locate the first, second and third side sections of the blank, counting from the forward end of the blank, are the fourth side section and the retaining bar 14 and its arms 12. I include the fourth side section. And this in spite of the fact that the fourth side section is not part of the machine but part of the work, because what the quoted means is that there are separate rigid side sections, four in number which are together located in co-operative foldable relationship by the retaining bar and its arms.

X Q. 176. By the same token, the small step-mitered blocks shown in dotted lines in Fig. 36 of the Rosback patent 608,796 are spacer blocks, for they are part of the work and are confined laterally by the side elements of the workholder, that is correct, isn't it?

A. I see no step-mitered blocks in Fig. 36 of this patent and find no description of any such blocks. Regarding the dotted lines of Fig. 36, this Rosback specification says, beginning at line 53, page 2:

"Figs. 35 and 36, a plan view and a side elevation, respectively, of a completed blank, showing by dotted lines the step-miter cuts."

X Q. 177. Yes, as the blank is pictured in Fig. 36, these blocks have not yet been cut out as is done by the Rosback

step-mitering machine of patent 609,630, but nevertheless the material contained within the dotted lines functions to keep the first second, and third cleats in proper foldable relation with respect to each other, does it not?

A. No such blocks are cut out by the machine of the Rosback patent No. 609,630. As shown in Fig. 31 of this Rosback patent No. 609,630, a series of saws eight in number cut eight grooves in the cleat, these grooves being of four different depths as far as the long cleat is concerned. After this has been done a cluster of "chipping disks" are employed which "chip out the wood between the cuts produced by the clusters H^1 and produce step-miters X^2, as shown in Fig. 30," as the specification of this patent says beginning at line 126, page 4. Accordingly I answer your question in the negative.

[fol. 639] X Q. 178. If the material which is afterwards cut out in this blank shown in Fig. 36 does not serve to position the first, second and third cleat, what does do so?

A. The continuity of the cleat from end to end maintains the cleat in its original condition and has nothing whatever to do with any maintenance of proper foldable relation because there is none. The foldable relation is created in the finished blank by cutting the cleats crosswise and by scoring the sheets.

X Q. 179. These cut-outs or prospective spacer blocks are what give the continuity, are they not?

A. They never do become spacer blocks. What is cut out is in the shape of a lot of sawdust and chips.

Accordingly I answer the question in the negative, and in any event, the "means" I imply in sub-paragraph 2 of paragraph 248 include a part of the work itself, to this extent, namely, that the bar 14 with its arms 12 can only hold the four separate sheets in proper relation to each other in the event that all four sheets are present. Take out any one of the sheets and the other three can slip to uncertain positions. Accordingly each sheet helps to maintain its fellows in place.

Lipps and Springer and Greenstreet show "means to locate the separate rigid side sections in co-operative foldable relationship preparatory to the attachment of the wires."

As to sub-paragraph 4 of my paragraph 248, we have agreed that the springs 15 of the workholder patent in suit

do not perform any function to adjust the cleats in the workholder if the cleats should be too short and should be misplaced in the workholder by the stockfeeder. They prevent their displacement.

As to sub-paragraph 5, Rosback, Knudtson and Uhri, Greenstreet and others in the prior art show stapling mechanism for applying binding wires to box blanks. The patents in suit do not purport to teach anything new in the way of stapling mechanism *per se*. So far as the providing of a stapling mechanism is concerned, the patents in suit are merely adopting the practices known at the time.

X Q. 186. To summarize your answers to the questions directed to paragraph 248 of your deposition, these sub-paragraphs are not presented by you as each representing something novel to the machine of the patent in suit, and as to sub-paragraph 5 the mechanism there referred to is simply the old mechanism used for the same purpose in patents of the prior art, is that correct?

A. Each subject-matter of these sub-paragraphs 1, 3, 4, [fol. 640] is in itself new. The fifth paragraph has reference to the mechanism for applying and attaching binding wire to the box parts while they are positioned in the way described in the preceding four paragraphs.

X Q. 187. You say you have read the Roscoe Steele deposition. Are the machines here complained of the same as those complained of in the Gibbons suit?

A. As I have heretofore said, I do not now recall all of the details of the machine of the defendant in the Gibbons suit and what I have said regarding the present defendant's machines has been based on the testimony of Mr. Steele and Mr. McElroy and the illustrative exhibits introduced during the taking of their testimony, and supplemented by my general recollection of the Gibbons machine.

Accordingly, I do not think I could now make such a detailed comparison such as would enable me to specify every detailed difference (if any), which may exist between the present defendant's machines and the particular machine involved in the Gibbons suit.

I am not testifying as a fact witness regarding defendant's machines or practices prior to the commencement of this suit.

X Q. 189. But as you understood Roscoe Steele's deposition, the defendant's machines in this case are substantially the same as in the Gibbons case, aren't they?

A. I do not recall Mr. Steele testified that he was familiar with the Gibbons machine as it stood at the time when I saw it in the summer of 1922. Accordingly, I am unable to answer the question.

X Q. 190. Well at least you know, don't you, that the machine complained of in the Gibbons case had the detents which are marked 36 in Plaintiffs' Exhibit 8, 9 and 12 in the present case?

A. As I have heretofore said, I have no distinct recollection as to the specific construction of the Gibbons machine in this particular. I do recall the Gibbons machine in the summer of 1922 had an anvil carrier of some character which was beneath a corresponding staple driver to clinch the staples when sheets alone were presented, and that these anvil carriers were moved out of the way when staples were driven through the sheets in the cleats. I do not, however, recall the specific construction of the then Gibbons machine in this respect and no testimony which I have given in the present case has been based in any way upon what the Gibbons machine in 1922 might have possessed with respect to this feature.

X Q. 191. Referring again to Howenstine, do you not [fol. 641] think as an expert that it would be easier to fasten the sheets to the cleats first rather than after the cleats are fastened to the end walls?

A. As I have already said, I myself should proceed in making the Howenstine box to fasten the cleats to the side walls and bottom before the cleats are fastened to the end walls. I think that I am committed to the position that this is the easier thing to do.

It might be the case that the vertical cleats could be fastened to the end walls before the same cleats were fastened to the side walls, and I suppose it might be necessary to have a competitive trial to actually determine the question of relative ease.

X Q. 192. Your interpretation of the Howenstine method was based upon the sequence in which Howenstine mentioned the different elements, wasn't it?

A. I think you have misunderstood me. I have said that the Howenstine patent contains no description of his

method other than what can be inferred from the order in which he described his invention. Except as this order of description may be taken as the procedure, there is no description of a method in the Howenstine patent.

X Q. 193. Please apply the same principle of interpretation to the Inwood and Lavenberg reissue patent 12,725.

A. I do not know that I can do any better than quote what the patent itself says, beginning at line 36 and ending at line 52:

"In the drawings 1 are the cleats which are stepmitered at their ends.

"2 are the box sides or sheets which are disposed upon the cleats, and 3 are reinforcing wires which are positioned coincident with the cleats and staples 4 driven straddling of said wires through the sheets into the cleats, the reinforcing wires thereby also serving to hinge the four sections comprising the completed blank together.

"The ends of the cleats 1 are spaced a distance apart measured from the adjoining edges of the sheets, equal to the thickness of such sheets, as at 5 so when the blank is folded to form the four sides of a box, the sheets will overlap, and form a square cornered box, as shown in Fig. 2."

It seems to me this is quite explicit. I do not think I can improve upon it.

X Q. 194. Precisely and accordingly the first step would be to stepmiter the cleats at their ends, wouldnt it?

[fol. 642] A. Yes.

X Q. 195. The box sides or sheets would be secured to the cleats?

A. No. The specification says that the box sides or sheets are "disposed" upon the cleats.

X Q. 195*a*. Well, then, after they are disposed upon the cleats X the next step is to position the reinforcing wires and then drive the staples straddling the wires and through the sheets in the cleats, isn't it?

A. Yes, that's exactly what the specification says regarding these two steps.

X Q. 196. This serves to hinge the four sections comprising the completed blank together, does it not?

A. Yes.

X Q. 197. This is done in such manner, isn't it, that the ends of the cleats are spaced a distance apart measured from the adjoining edges of the sheets equal to the thickness of such sheets, so that when the blank is folded to form the four sides of a box the sheets will overlap and form a square-cornered box, as shown in Fig. 2 of the said reissued patent?

A. Yes.

X Q. 198. Reverting again to Howenstine, don't you think that the natural way of making a box or any other wooden structure in which a thick piece and a thin piece are to be fastened together is to first lay down the thick piece and then place the thin piece over it and fasten it to the thick piece?

A. I do not know of any natural way of performing. It would depend entirely upon circumstances.

For example, if the thick piece happened to be of smaller dimensions than the thin piece superficially and the thick piece of small area was to be attached to the thin piece of large area at a particular location, it would seem to be desirable to lay down the thin piece, locate the thick piece at the right spot and then drive a nail through the thick piece and into the thin piece.

No generality can be true in all cases.

X Q. 199. Did you ever do any carpentry work when you were a boy or a young man?

A. I should not like to dignify my amateur performances with cabinet work.

I am qualifying as a theoretical expert, at least, in woodworking, but not as an operative mechanic. If we drive a nail through the thick piece into the thin piece, as I described in my answer to X Q. 198, the head of the nail would then be on the outer surface of the thick piece.

X Q. 202. Are you willing to state it as your opinion [fol. 643] as an expert of any kind that this would be a natural and logical way to fasten the two pieces together?

A. I think so in the instance which I mentioned in a preceding question where a thick piece was to be fastened in a particular spot on a thin piece of larger area.

X Q. 203. How thick are the side sheets in the boxes contemplated in the patents in suit?

A. As I recall I have given some specific dimensions in my testimony in the Gibbons suit and as I recall the figures the thickness of the sheet was in the neighborhood of one-quarter of an inch and frequently three-sixteenths of an inch.

X Q. 204. It is fair to presume, I suppose, that this would be about the thickness of the sheets Howenstine contemplated using?

A. I do not think any presumption can be drawn from the wirebound box practice. Howenstine says that he wants to produce a light and strong structure (page 1, lines 10 and 41), and he accordingly suggests and illustrates thin pieces of board and the use of two pieces of the thin board with their grain crossing at right angles. This is the way cigar boxes are frequently made and in this way a thin and light wall may be made.

He also says that he may use a single sheet of wood for each side of the box and by a selection of a high grade wood doubtless he could get the desired strength as in the case of the two-ply sides.

In the case I have described of driving the nail through the thick and into the thin piece the thick piece has the benefit both of the head of the nail and of the major portion of the length of the nail for holding while the thin piece has the benefit simply of the pointed end of the nail, and whatever clinching there may be of the pointed nail.

X Q. 206. Generally speaking, do you think that would be good practice omitting the consideration of clinching which is absent from Howenstine?

A. I do not think there can be any, generally speaking. The best way of doing a thing will be dictated by the environment.

Certainly, if I were called upon to fasten a picture molding to a thin plaster-board wall I would drive my nail through the picture molding and into the wall and I would not go on the other side of the partition and drive through the plaster board and into the picture molding.

I am not giving that as a parallel to the making of boxes composed of thin sheet material and cleats, but you have been talking about generally speaking and natural ways [fol. 644] without any reference to any specific organiza-

X Q. 208. Evidently you have overlooked the fact that I have repeatedly mentioned Howenstine patents and the structure there illustrated. I now ask you, referring to the box structure such, for example, as in the Howenstine patent, it would not be the normal natural thing to do to drive the nail or staple first through the sheet and then into the cleat?

A. Certainly it would. I have already committed myself to that proposition because in explaining how I thought the Howenstine box was made I said the staples would be driven through the sides and bottom and into the cleats.

But in fastening the cleats to the box ends Howenstine drives his staples through the cleats and into the box ends.

X Q. 209. If you should see a mechanic with the Howenstine patent before him and also the component materials of the Howenstine box at hand proceeding to make the Howenstine box, and he should first lay down one or more cleats and then staple the sheets to them by driving the staples through the sheets into the cleats, would you criticise that as bad practice?

A. I should criticise it as poor practice compared to what Howenstine describes as I understand him.

In the Howenstine box accurate placement of the cleats, sheets and box ends are required.

By proceeding in the manner which I have stated as my understanding, the required accuracy is obtained.

It will be noted on reference to Fig 2 of the Howenstine drawings that the side sheet material is composed of two layers throughout the interior only of the completed box. The inner ply of each side is shorter than the outer ply so that a shoulder is created which serves as a means for locating the box end in proper position.

Accordingly, when Howenstine has connected his stiffening rods to the sides and bottom of the box and has turned up the sides parallel with each other, he then inserts the two end walls between the sides and against the shoulders.

Howenstine can then place his cleats into accurate position and can then handle the box with little danger of disturbing this accurate position.

He would insert at each end the bottom cleat; fitting it against the bottom and against the end wall and the two vertical sides of the box would insure the longitudinal posi-

tion of the bottom cleat and prevent endwise displacement [fol. 645] without further attention on the part of the workman.

If the workman then takes the two vertical cleats and inserts them in place until their lowered mitered ends engaged the mitered ends of the bottom cleat, he could observe the accuracy of the position of these vertical cleats by seeing that they were pushed in against the outer face of the end wall and that their upper exposed ends were properly disposed with respect to the exposed edges of the box sides.

He could then turn the box upside down on the table, as I have before explained, with little danger of displacing the parts, and if there were any displacement he could readily restore the parts to proper position.

He would then drive staples through the bottom sheet and into the bottom cleat without any possibility of any shift of the bottom cleat due to the staple driving.

He would then proceed as I have before stated and turn the box on its two sides in succession and drive the staples into the two side walls and into the two side cleats.

At this stage of the operation he would have his end walls confined and in accurate position and he could then drive the staples shown at the i² in the drawings through the verticle cleats and into the box ends.

With your suggested practice if the workman laid down a cleat and put a sheet over it he would have to see to it that the sheet and cleat were placed accurately together both endwise and sidewise and he would have to take care that there was no change in this accurate relation when driving the staples or as the effect of such driving.

This would be particularly true in the case of the Howenstine box because the slightest inaccuracy longitudinally of the cleats would prevent the box folding and a slight inaccuracy widthwise of the sheets would prevent the insertion of the box ends. In the particular construction shown by Howenstine each box end fits between the side cleats and the shoulders constituted by the ends of the short plies of the two-ply sides.

The same accuracy of positioning would be necessary in Healy 768,123.

I have not seen one of plaintiffs' commercial machines for over three years and I do not recall whether they had the

springs 15 of the patents in suit or any similar springs. On page 2 of my direct testimony I said, "I have been familiar with these patents (meaning the plaintiffs' patents in suit) and with the structures and methods therein disclosed, for several years."

[fol. 646] X Q. 213. Now I ask you, in view of that statement, and the impression which it evidently intended to convey, whether it is not true that in plaintiffs' commercial machines the cleats are held both endwise and sidewise in the carrier chains and that no springs like the springs 15 of the patents in suit are either employed or are necessary; isn't that true?

A. I do not see any connection between your premise and your conclusion.

The structures shown in the patents in suit do have the springs 15.

I have heretofore testified in the Gibbons suit that I never saw the specific structure of the patents in suit in commercial use.

I have seen plaintiffs' commercial machines in use making box blanks, but as I have just said, I have not seen one of plaintiffs' commercial machines for over three years and I do not recall whether they had any springs similar to the springs 15 or not. This may be a fault of observation or of recollection.

I have seen neither plaintiffs' commercial machine nor defendant's machine within about three years.

X Q. 215. How long since you have seen, if you ever did see, machines constructed in accordance with the design shown and described in the patents in suit?

A. I have just said that I never saw such a machine.

X Q. 216. Suppose a manufacturer had four Rosback machines, such, for example, as the one shown in patent 614,348, you would then have enough cleat pushers to make eight-cleated blanks by the loose cleat method and to make one one machine as many blanks as Rosback made, wouldn't he?

A. Yes.

X Q. 217. In Flora patent 775,622, a preformed cleat blank could be made on the machine of that patent, couldn't it, either by using the loose spacer block method or the precleating method?

A. I never saw any loose spacer block method, nor do I know sufficient about it to be able to form any definite idea of what it is. As far as I know I never even saw a drawing illustrating it.

I do not know whether it could be carried out on the machine of the Flora patent or not.

Nor do I know if the precleating method could be carried out on the machine of the Flora patent or not.

X Q. 218. If all of the four side sheets have cleats fastened to them before they are introduced into the wire applying and stapling machine, and the edges of the sheets [fol. 647] are in contact with each other, one pair of cleat pushers for each blank would be enough, wouldn't it?

A. Which machine do you mean, the Flora machine?

X Q. 219. Either Flora or Rosback or Knudston & Uhri.

A. I do not see how the Flora machine could possibly be used in this way and I would like to have you explain how you propose to proceed with Flora.

Also there are several Rosback patents showing different machines as to each of which I would generally say that I do not know.

I really think that if I am to answer such a question as this I should not be turned loose on the whole mass of patents.

If you will select a particular one patent which you think is best adapted to carry out this idea, I will be glad to give you my views in detail.

But I do not think that I should be obliged to take up the time to study every one of these patents and reach a conclusion adverse to them and perhaps finally locate one of the patents to which I might make a categorical affirmative.

I am presumed to be familiar with the art. Perhaps we can get at it simply this way: Assume any one of the prior art patents in which there is a stapler and guides for leading the sheets and cleats up through the stapler. Now assuming that the cleats are fastened to the sheets before they are placed in the guides and that the sheets touch each other edge to edge so that each can push forward the one ahead of it, it would be sufficient to provide a single pair of cleat pushers one on each feed chain for advancing the material to the stapler, unless there was some particular feature inconsistent with so doing.

Referring to Walker patents 763,579 and 767,613, these patents show preformed cleats. And they are attached to the sheets before the blanks are folded.

In hastily running over the patents in suit, I do not find any reference to any other sort of cleats except the step-mitered ones. I say this subject to correction if I am wrong.

X Q. 224. In the Gibbons case nothing was said about detents was there?

A. As I have already said I do not recall myself having used the word. I do not know what other witnesses may have said.

As far as I recollect in my testimony at least, in the Gibbons case, these parts which in the present case have been [fol. 648] referred to as detents received no special consideration.

X Q. 226. Unless there was some special reason to the contrary, determined by the particular structure called for, would you not say that the best and ordinary practice in the box art, say at the time of the Healy patent, 768,123, would be to lay down the cleats then dispose the sheets upon them and then drive the nails or staples down through the sheets and into the cleats?

A. If there were no particular reason to the contrary, I should say yes. I think, however, in the Healy case that there is a particular reason for doing otherwise, namely, the accurate maintenance of the several cleats on the sheets and the maintenance of that accurate position during the driving.

X Q. 227. Suppose a man having ordinary skill in the box-making art and familiar with the Rosback and other machines of the prior art were told to take a Rosback machine and adapt it to make a blank in accordance with the method described in your answers to X Qs. 193 to 197, both inclusive, would he have to do anything more than add some pushers in proper position to the feed chains?

A. No.

Deposition closed.

Signature and notarial certificate waived.

By Mr. White: I wish to offer in evidence the sketch referred to by Mr. Browne in his direct testimony in rebuttal,

entitled "Browne's Sketch of Modified Rosback Method" facing page 568 of this record, as Plaintiffs' Exhibit No. 25.

By Mr. White: Plaintiffs' counsel states that plaintiffs will call no more witnesses in rebuttal. Plaintiffs' counsel, will, however, offer in the record of this case a number of extracts from the records of prior litigation, in accordance with the stipulation entered into between plaintiffs and defendant on May 19th, 1925.

[fol. 649] OFFERS IN EVIDENCE

By agreement of counsel, and pursuant to the stipulation heretofore made of record and dated May 19, 1925, plaintiffs' counsel, under paragraph 7, and the sub-paragraphs thereof of said stipulation, offers in evidence the following:

1. From the record in the United States Circuit Court of Appeals for the 7th Circuit, October term, A. D. 1909, in equity No. 1717, National Wirebound Box Company, Samuel M. Robinson, Richard G. Inwood and Perry C. Lavenberg, Appellants, v. William P. Healy, Appellee:

Master's Findings

Finding 19:

147 On March 31, 1904, the complainant (Healy) and the defendants (Robinson and Inwood) entered into a contract which bore date March 21, 1904, for the organization of the South Bend Healy Box Company * * *

Finding 22:

151 On the 21st of April, 1904, the defendants Robinson, Inwood and Lavenberg, organized and incorporated under the laws of the State of Indiana, the South Bend Healy Box Company, and on the 26th day of April, 1904, the complainant executed to the South Bend Healy Box Company a license, an unexecuted copy of which was attached to the said contract of March 31, 1904 (dated March 21, 1904) * * *

Finding 24:

171 Following the execution of the contract executed March 31, 1904, as aforesaid, the defendants Robin-

son, Inwood and Lavenberg partly equipped a wirebound box plant and endeavored to operate the same at South Bend, Indiana, until the 21st day of April, 1904, when the South Bend Healy Box Company was organized and incorporated, and said box plant was, upon the 1st day of June, 1904, transferred to it. The first week in May boxes were manufactured in this factory; the defendants Robinson, Inwood and Lavenberg were the sole organizers and incorporators of the said South Bend Healy Box Company; said Box Company was used for the dual purpose of exploiting and promoting the wirebound box industry, and for manufacturing boxes for commercial purposes; Robinson, Inwood and Lavenberg owned all of the stock of said corporation; Robinson was its president; Inwood was its treasurer, and Lavenberg was one of its directors, secretary and superintendent * * *

[fol. 650] Finding 26:

172 On April 16, 1904, the complainant Healy delivered said large set of Rosback machines to the defendants Robinson and Inwood in pursuance of said contract of March 31st, 1904, and they at once removed these machines to South Bend, Indiana, and placed them in their box factory in that city and held them in their possession until June 1, 1904, when they delivered possession of said factory and contents, including said Rosback machines, to the South Bend Healy Box Company hereinbefore mentioned, such delivery was made at the factory in South Bend, which is referred to in Finding 24.

Finding 30:

173 On April 21, 1904, the South Bend Healy Box Company was organized and incorporated with an actual paid-in capital of $2000 by the defendants Robinson, Inwood and Lavenberg as its sole incorporators and they became its sole directors and officers and remained such continuously thereafter for over four months: * * *

Finding 33:

174 On April 30, 1904, complainant [William P. Healy] moved from Chicago and took up a temporary resi-

dence in South Bend, and remained there the greater portion of the time until the 20th of September, 1904.

Finding 34:

174 On May 1, 1904, Robinson and Inwood employed said Rosback, inventor of said Rosback machines, to repair the large set of Rosback machines in conformity to the agreement dated March 21, 1904, hereinbefore mentioned. Rosback worked upon said machines from May 1 to June 8, 1904, but his efforts to improve said machines so that the same would work successfully were without avail. During the time that said Rosback was so engaged in his effort to repair said machines, the defendants Inwood and Lavenberg worked in the same room with him and had an opportunity to watch and observe, and did watch and observe, his efforts to repair said machine, and they kept themselves informed as to the progress of said work.

Finding 40:

177 It became apparent in the latter part of May, 1904, that Rosback could not so repair the large set of Rosback machines as to make them suitable or useful for making sample boxes, except as aforesaid, and between May 21st and May 24th, 1904, the defendant Inwood and the complainant went to St. Joseph, Michigan, and visited the plant of the St. Joe Iron Works and while there an order [fol. 651] was given said Iron Works for the building of a box-blank machine for the South Bend Healy Box Company, the order not being effective until the payment thereon of $300, which amount was paid on May 27th, 1904.

Finding 53:

191 On July 29, 1904, complainant let a contract to the Sandage Steel Skein Company of South Bend to build a box-blank machine patterned after and similar to the Brown machine. Negotiations leading up to this contract were carried on by the defendant Inwood on behalf of complainant, with William Inwood, treasurer of said Sandage Steel Skein Company, who was a brother of said defendant Inwood. The written contract made between com-

plainant and the Sandage Steel Skein Company provided that if the latter company made any invention in building the machine, such invention would be the property of the complainant and should be assigned by said Skein Company to him free of charge whereupon he would, at his own expense, procure letters patent covering the same.

Finding 60:

196 On September 13, 1904, the day that Inwood refused to assign the inventions to complainant, as hereinafter mentioned, the condition of affairs was as follows: The Rosback and Flora machines had been discarded by consent of complainant and Robinson, Inwood and Lavenberg.

The Brown machine, the step-miter machine built by the South Bend Healy Box Company and the end-stapling machine were in successful operation, making the lapped boxes in the factory of the South Bend Healy Box Company and were being exclusively promoted for complainant by said Robinson, Inwood and Lavenberg under their several contracts of promotion with him.

The legal title of said last mentioned three machines was and still is in complainant; and the said defendants were representing to prospective licensees, that the patents owned and controlled by complainant were broad and fundamental and covered the art and industry of manufacturing wirebound boxes by machinery.

Everything was harmonious between the complainant and said Robinson, Inwood and Lavenberg, there were almost daily conferences between them in reference to the promotion of the enterprise, and there were substantially no disputes or differences between them. Complainant was aiding them by his advice and counsel. He was also
197 hurrying up the building of the end-stapling ma- [fol. 652] chine and the Brown machine by the St. Joseph Iron Works. He paid that company $150 in full for the end-stapling machine and he paid $331.86 on the Brown machine, which the contract of March 31, 1904, as modified required the South Bend Healy Box Company to pay.

Finding 84:

209 Prior to the 24th day of May, 1904, the idea had been suggested in discussion between the defendants

Inwood and Lavenberg of step-mitering the cleats at the ends before securing them to the veneer in making the box blank. This idea was suggested to Brown on his visit above set forth to the factory of the South Bend Healy Box Company, on May 24th, 1904, and was disregarded as being impracticable or impossible of operation. Thereafter on June 7th, 8th or 9th, designs were commenced for a machine for accomplishing this purpose by defendants Inwood and Lavenberg. A machine in accordance with the designs so made was built by Lavenberg and was completed on the 2nd or 3rd day of July, 1904. The evidence does not show that any application for a patent on this machine has ever been filed in the Patent Office.

(a) Certain parts of the deposition of William P. Healy, on plaintiff-appellee's opening case, which deposition was commenced on August 31, 1905, and concluded on September 5, 1905, are offered in evidence, as follows:

DEPOSITION OF WILLIAM P. HEALY

318* WILLIAM P. HEALY, complainant and cross-defendant, testified as follows:

Direct examination.

By Mr. Simms:

Reside in Chicago; 64 years of age; occupation, trying to introduce wirebound packing boxes into public use, in which have been engaged over ten years. Am a stockholder of Wire Bound Packing Box Company of Chicago, and have been since November 15, 1894. Of 3000 shares of this company, par value $100, I owned 2576.

[fol. 653] I was chosen secretary of the company, December 20, 1894. I held that office until some time in 1896 when I was chosen president of the company, and I have held that office ever since, and hold it now. I have also been manager of the company and I have attended solely to the affairs of

* Page references in margin refer to pages in the printed record of National Wirebound Box Company et al. v. William P. Healy, U. S. Circuit Court of Appeals for the Seventh Circuit, October Term, 1909. Equity No. 1717.

the company myself since 1895. I have, in fact, been president, de facto secretary and everything. Less than one-sixth of the stock that is held by other parties was
324 somewhat scattered, and they have paid no attention to the management of the company since 1896. This company purchased the Knudtson and Uhri patent No. 518,038, dated April 10, 1894, covering machines for the manufacture of wirebound box blanks. The Company still owns this patent and operated thereunder in attempting to build machines for the manufacture of wirebound packing boxes. The Company became embarrassed in 1895. The stock was non-assessable and the Company was capitalized for $300,000, and we could not increase the capital stock, because it was excessive as it was. They made the capital stock non-assessable and valued the machinery and the patent at $298,000. I regarded that as somewhat fraudulent as to creditors, and I refused to consent to any further increase of the capital stock. We finally agreed to organize another company with a capital stock of $30,000 but with the same number of shares, 3,000, at ten dollars each, under the laws of Michigan. We did so, and each stockholder of the Illinois Company received one share of stock of the Michigan Company for one share of his stock in the Illinois Company, so that the two companies were practically the same stockholders. All of the Illinois stockholders entered into the Michigan Company except the holders of seventy-four shares out of three thousand. They did not come in, but they made no objection to the proceeding.

The Illinois Company then made a conditional sale to the Michigan Company of all its patents and inventions and property generally, and reserved a royalty of one half of one per cent. on the gross sales of boxes. The sale would have been absolute, only for the fact the seventy-four shares did not come into the new company. Hence the sale was made conditional so that the rights of the seventy-four shares would be protected: they would receive their share of the one-half of one per cent. royalty.

The new company, the Michigan Company, in which I had 2340 shares, out of the three thousand after making two assessments of one dollar each which would be $6,000 became embarrassed, and all the small stockholders, in [fol. 654] fact, all the stockholders, except myself refused

to go any further; they had lost confidence in the enterprise; it had dragged along so much they refused to go any further. I had then about $26,000 in cash invested in the enterprise, and I did not want to lose it, and I told them that I would start for myself, and we held various consultations and we finally agreed I should have an exclusive license.

326 The Michigan Company theretofore acquired rights to the patents owned by the Illinois Company. I have already testified that there was a conditional sale made by the Illinois to the Michigan Company on November 5, 1895.

The paper marked by the notary "Exhibit 3" is United States letters patent No. 608,809, granted to the Wire Bound Packing Box Company of Illinois. It is an improvement to the Knudtson and Uhri patent for making box blanks, granted August 9, 1898.

Q. When was this transfer to the Illinois Company with reference to the time when the Illinois Company made the condtional sale you have mentioned?

A. There was no patent granted at that time. It was not granted for several years afterwards, but the invention was then being made and the application was made November 16, 1895, but the patent was not granted until 1898, August 9, 1898, and it was granted direct to the Wire Bound Box Company without any intervention of anybody.

I do not think the application therefor was pending at the time the conditional sale was made. The conditional sale was made November 5, 1895, and this was filed November 16, 1895, so that it was practically done for the Wire Box Company at that time.

* * * * * * *

Q. What other patents, if any, did the Illinois Company have at the time the conditional sale was made?

A. There was a patent granted by the United States to John Howenstine, a patent on wirebound boxes. This is it, No. 4.

The Howenstine patent granted June 2, 1891, was assigned to and exclusive license granted to Henry Stephens of Chicago in June, 1891, and Henry Stephens assigned this

exclusive license to the Wire Bound Packing Com-
332 pany on the 26th day of July, 1894. Stephens assigned that patent to the Illinois Company.

* * * * * * *

336 [fol. 655] At the time the conditional sale was made, the Illinois Company had become the owner of the Knudtson and Uhri patent and the improvement thereto, but became the owner of the exclusive license from Howenstine to Stephens,—Howenstine did not sell the patent; but gave an exclusive license for the whole of the unexpired term of the patent, which is in legal effect an assignment.

The Michigan Company was formed just immediately before the conditional sale conveyance. The conveyance was agreed upon before the Michigan Company was organized. It was agreed upon by the stockholders of the Illinois Company among themselves.

337 The conditional sale, Exhibit 7, identified by witness and made a part of deposition, reads as follows:

This Agreement made this fifth day of November A. D. Eighteen Hundred and Ninety Five between the Wire Bound Packing Box Company, a corporation organized under the laws of the State of Illinois, party of the first part, and the Wire Bound Box Company, a corporation organized under the laws of the State of Michigan, party of the second part, Witnesseth: Said party of the first part hereby sells, assigns and sets over conditionally to said party of the second part, its successors and assigns, the following licenses and patents subject however to the terms and conditions hereinafter mentioned and set forth:

1. The license and agreement issued by John Howenstine, June 6th, 1891, to Henry Stephens of Chicago, Illinois, and by said Stephens assigned to said party of the first part, said license and agreement being an exclusive grant to said Stephens and assigns to manufacture the folding boxes described in patent Number 453,479 issued by the United States of America to said John Howenstine, June 2nd, 1891. Said license and agreement is recorded in Liber V. 44, page 124 of Transfers of Patents in the Patent Office, Washington, D. C., to which reference is hereby made.

2. The patents issued to Thurston L. Knudtson and Jacob Uhri of Chicago by the United States of America as follows: Number 483,254, September 27, 1892, for staple forming and driving machines; Number 518,038, April 10, 1894, machines for making box blanks, which patents were sold and assigned July 26th, 1894, by said Knudtson and Uhri to said party of the first part by written assignment, which assignment is recorded in liber H. 50, page 318 of Transfers of Patents aforesaid, and to which reference is hereby made.

[fol. 656] 3. The party of the first part, also conditionally, sells and assigns to said party of the second part, the set of machines now built and situate at No. 2626 Shields Ave., Chicago, consisting of two machines built by Knudtson and Uhri, and the step-mitering machine; also the original Howenstine machine; and absolutely sells and assigns all other machinery, veneer, shafting, belting, tools, gas, fixtures and furniture belonging to said party of the first part and situate at said No. 2626 Shields Avenue. Also the insurance policies on said property mentioned in this subdivision.

4. Said party of the first part also conditionally sells and assigns to said party of the second part, its successors and assigns, the improvements made and invented by said Jacob Uhri on above machines, within the United States of America only, and for which a patent has been or is about to be applied by said Jacob Uhri for the use and benefit of said party of the first part, in the United States. The exclusive right to obtain patents for such improvements in all foreign countries is hereby reserved by said party of the first part to itself, its successors and assigns.

* * * * * * *

341 On November 5, 1895, the date of the condtional sale, I was secretary of both the Illinois and the Michigan Company. The board of directors of the Illinois Company consisted of Henry Stephens, myself, and A. E. Campbell. That was the quorum or majority; the other two I cannot remember just now. Henry Stephens was president. There were something like eight or ten stockholders, I cannot remember exactly.

* * * * * * *

346 The Illinois Company had never been able, during its time, when it was endeavoring to operate and do business, to make any money. It lost money; it lost all it had; spent every dollar. They had some treasury stock, about 87 shares, and that was sold in order to raise some money. As to assets, it had this patent to Knudtson and Uhri, that was a good asset, and then it had patent No. 608,809, and then it had a machine that Knudtson and Uhri built, which we thought was valuable at the time, but was afterwards thrown into the junk pile; we found it would not work, and had $2,000 in cash, I think $2,000 in cash paid into the treasury. That was in addition to that realized from the sale of the 87 shares of treasury stock. The 87 shares was not sold until I got in the company. Eleven or twelve hundred dollars was realized from the sale of the 87 shares. We sold it at public auction. Notice [fol. 657] was sent to the stockholders and I bought in most of it. Mr. Johnson bought in ten or twenty shares.

The assets belonging to the Illinois Company were expended in experiments in trying to build commercial machines, in which we failed.

Q. What was the financial condition of the Illinois Company at the time the Michigan Company was organized?

A. The financial condition; we could not go ahead any further; it had nothing to go ahead with.

The assets were expended in building machines and experiments, paying wages to the men and buying materials to build the machines. At the time the Michigan Company was formed, the Illinois Company had no money on hand. It was in debt about eleven hundred dollars. We owed the firm of Dyrenforth & Dyrenforth about $800 for services, which was afterwards paid by the Michigan Company.

Q. What effort was made to pay and discharge the debts of the Illinois Company prior to the organization of the Michigan Company?

A. The stock was non-assessable and we could not call in an assessment, and tried to get voluntary contributions from them. Some paid and some didn't, and then we abandoned that and came to the conclusion that the only thing to do was to organize the Michigan Company and have the same stockholders in both companies. Really one was the continuation of the other.

At that time they had the Knudtson and Uhri patent and the patent afterwards granted to the company, No. 608,809. They had the machine I referred to, but it was no good. It was thrown away as old junk.

The officers or board of directors or stockholders of the Illinois Company had absolutely no means at hand or at command to pay and discharge its indebtedness before the organization of the Michigan Company. From the fact of the stock being non-assessable, they could raise no money. That company was largely over-capitalized. Some wanted to increase the capital stock and issue more stock, and I would not allow that and when I took charge as secretary, the certificates of stock were fully paid and non-assessable, $300,000 paid in, and they only paid in $2,000, and the conveyance of the patents. After the words "fully paid" I inserted the words "by the conveyance to this Company of certain patents of prospective value." I wanted to show that the $300,000 was not paid in cash. I wanted to show the fact.

348 The certificates read "fully paid," but of course, [fol. 658] they were not fully paid. It was a fraud in my estimation.

After the organization of the Michigan Company, it raised two assessments of one dollar each, which brought $6,000 cash into the treasury. The money was paid into the corporation, six thousand dollars by the stockholders. We expended this money in endeavoring to build a wire-bound box-blank machine. The builder of that machine was Mr. Jacob Uhri, and we got patent No. 608,809 from his efforts, from his invention. That is about the only result. After a while the money was all expended. The Michigan Company paid the debts of the Illinois Company in full, principally to Dyrenforth & Dyrenforth for legal services, which amounted to, I think, about eleven hundred dollars, to the best of my remembrance, and the rest of the six thousand dollars, was spent in paying Mr. Uhri in building and experimenting, try to perfect the machine.

No boxes or products were built or perfected by the Michigan Company and put upon the market. There was never a box sold. I never sold a single box, but there was quite a number of sample boxes made while we were experimenting; naturally we made some boxes. These we

gave away, but there were very few boxes made while Mr. Uhri had charge. The Michigan Company went out of business. It was dissolved under the statutes of Michigan on January 9, 1900, or thereabouts. That is my best recollection.

349 From first to last, since I began with the Illinois Company, I have expended in this enterprise from September 15, 1894, to the present time about $62,000 in round numbers, and then five per cent interest on that investment would be about $82,000; that is, if I had five per cent on that amount of money. I put in $62,000. My income has been $43.41 royalties from the South Bend Healy Box Company of which the Wire Bound Packing Company is entitled to one-half of one per cent. I wish I had never heard of the Wire Bound Box Company. I think there is three or four months' royalties due from the South Bend Healy Box Company which they have not paid yet, which will amount to about the same as before. I consider it good.

. The Illinois Company and the Michigan Company were organized to manufacture and sell wirebound packing boxes and build machines for the manufacture of wirebound packing boxes. The devices and boxes and products which these companies were to turn out were covered by patents, the Knudtson and Uhri patent and the Howenstine patent. [fol. 659] Machines for making wirebound box blanks were made under the Knudtson and Uhri patent. Under the Uhri patent which was an improvement to the Knudtson Uhri patent it was for the manufacture of wirebound box blanks, and the Howenstine patent covered wirebound boxes with intercellular ends, but not with solid ends.

350 Exhibt "A" which I have here is a wirebound box which it was the purpose of the Illinois and Michigan Companies to manufacture. I desire to say about that box that it was manufactured by a set of my patented machines and was manufactured in Paris by myself, at my space at the Paris Exposition. I forgot to state, and I will state now that I was awarded a silver medal by the Exposition authorities for my machinery that was exhibited there, and that was the highest that the Paris Exposition awarded to machinery that has not been introduced into public use, under their rules and regulations. I was informed that they could give no higher than a silver medal.

Exhibit "B" is a box blank made by my patented machinery at the Paris Exposition, also by myself. A box blank is folded in the shape of a box, and then ends put in and form a box. This is the principal portion of the box. The blank can be so made as to be folded. It is first made in a rigid blank, by the box-blank machine. The wire is put on and stapled on by the box-blank machine. It was then step-mitered by the step-miter machine and then ends were put in by the nailing machine. That was the original plan of making the wirebound boxes, but now the cleats are step-mitered before being fastened to the box and the ends are fastened in by the stapling machine, instead of by a nailing machine. The blank is to be folded in the
351 form of a box before the ends are to be stapled in.

After the dissolution of the Michigan Company to which I have referred, I took no steps to organize a new company, but went on as an individual.

Q. What efforts, if any, did you make to introduce the products of these machines covered by the patents that you have mentioned, to the public?

A. After the Michigan Company retired in 1896,—they retired from business then,—I went on alone, and employed another inventor named Rosback at No. 60 Canal Street, Chicago. I had him for four years, experimenting and trying to build commercial machines. He built several for me, and I expended probably in his shop ten thousand dollars, certainly it was all of ten thousand dollars, and then [fol. 660] I got out some patents. I got three or four patents from Rosback on the machinery. He invented a step-miter machine. He built three step-miter machines for me, and he built three box-blank machines and two nailing machines, and I devoted my personal attention to this for four years. I did not take any vacations in the summers, I kept right here along nearly all the time. I believe I did take one vacation in 1897. My efforts were continuous, expending money all the time in trying to perfect a set of machines to build wirebound boxes. I did not like to lose the money I had put in. I was putting in good money after the bad. And then in 1900 I had Rosback, or 1899, I had Mr. Rosback build a small set of machines, and I went to the Paris Exposition and exhibited there, and I made sev-

eral thousand boxes there, and circulated them among those who called at my space in the Exposition. I was there eight months at Paris, and then I went to London. The machines attracted a great deal of attention in both Paris and London from woodworkers and people interested in box manufacturing, and everybody spoke that knew about the subject—I met woodworkers and persons interested in packing boxes from nearly every country in Europe, and from other countries, South America, and so on, Mexico, and they all said they had never seen anything like that before; that to them it was new, entirely new, both the boxes and the machines.

In exhibiting the boxes in connection with its manufacture, to the people whom I have mentioned, I had the space there at Paris, I was across the aisle from the exhibit of the Crane Company of Chicago, and I had a great many people stop every day and look at the machine, especially the step-miter machine, you could hear it five hundred feet, and it attracted attention everywhere, and they came forward to see it. I made about 3,000 boxes there on the machine and gave them away as souvenirs of the exposition, small boxes. I issued also circulars in German, French and English and tried to promote the boxes and had promoters trying to do so. In exhibiting these sample boxes in London, I rented a room at No. 33 Charles Street, near Hatton Garden, London, and made there probably twelve hundred boxes, and gave them away and had various people come there to see them, and had promoters come there to try to promote the enterprise. I was continuously engaged in London for five months, from Thanksgiving Day, 1900, to the 8th day of May, 1901. I was there trying to promote it and make boxes. From there I came back to
[fol. 661] Chicago, brought all my outfit back to Chi-
353 cago. I then called on Messrs. Dyrenforth & Dyrenforth, and they recommended another inventor to me, Mr. Flora, to me. I got acquainted with Mr. Flora, E. Flora, designer and inventor, and he took hold of the enterprise trying to promote it in Chicago, and he associated Mr. Inwood with him, one of the defendants here, and they both tried to promote it for a while and failed in the enterprise. And then Mr. Flora made a set of drawings for me for the three machines which cost me $1,200. I afterwards got a

patent on Mr. Flora's invention granted to me from the United States. It is a different invention from Mr. Rosback's machine.

I cannot say now about how long Mr. Flora was really connected with me; quite a number of months. Oh, we were together off and on for quite a while, probably from 1901 until the spring of 1904.

I first met Mr. Inwood by being introduced to him by Mr. Flora in the fall of 1901. I think it was in 1902 that Mr. Flora took the option from me and associated Mr. Inwood with him. Mr. Flora got me up a set of working drawings of three machines. He superintended and made the invention and then he had draftsmen working on it, but finally I was obliged to retain Mr. Inwood to complete them. I think I paid him about $100 to help complete Flora's drawings. I think Mr. Inwood is a draftsman. He drafted there all right, so far as I know. Of course, I am no judge of these matters. I saw him drafting. Mr. Inwood was then living in Chicago, Hyde Park somewhere, in the same region with Mr. Flora. He afterwards went back to South Bend, I think when his mother died, to look after his estate, which he inherited, in January, 1904, that is my best recollection.

* * * * * * *

355 My first inventors during the time I have been working at this matter, were Knudston and Uhri, and then they dissolved partnership the first of January, 1895, and then Uhri, and then about the first of January, 1900, I employed Mr. Rosback, and then I had him until September, 1900, and then in 1901, after I came home, I got Mr. Flora.

* * * * * * *

356 This paper marked Exhibit 10 is a letter written by me on March 16, 1904, to R. G. Inwood, South Bend.

[fol. 662] Letter offered in evidence and reads as follows:

"Chicago, March 16th, 1904.

"R. G. Inwood, Esq., South Bend.

"DEAR SIR: I saw your letter to Mr. Flora today, but I did not see him. I forwarded the box per Adams Express

to P. C. Lavenberg, Kendalville, Ind., and I enclose express receipt. I also will send you a tool this evening for driving the staples. It was invented by Mr. Flora and I want you to be sure to return it to me after the boxes are made, as it — the only one that I have. I think that No. 14 wire will be heavy enough for the Singer boxes. That was the size used on the heavy box which I sent to Paris and which weighed 358 lbs. It came back safely. The Singer boxes should have 5 binding wires with staples of No. 16 stiff wire 1-7 16 inches long and 2-1/2 inches apart and clinched on the under side of the cleat. It is important that the staples be clinched. The cleats ought to be 7/8 x 1 1/4 inches. This will require the staples to be 1-7 16 inches long. The ends of the boxes ought to consist of one piece or 2 pieces dovetailed 1/2 inch thick in the Singer boxes, as the ends are quite large and have no protection from wire. 5/16 stuff will be thick enough for side, top and bottom of Singer boxes. The goods when packed should exactly fill and fit the box. Great care must be used by Mr. Lavenberg in getting the step-miters exactly opposite each other and that the lid of the box extends just to the outside of the sides of the box.

"Yours truly, W. P. Healy."

* * * * * * *

396 I first met Mr. Robinson on the 25th of March, 1904, at the place where I had my small set of machines in Chicago here, No. 5646 Lake Avenue. We had considerable conversation at that time about the box business, about the enterprise, and about the machinery. He came there with Mr. Lavenberg, and with Mr. Inwood, and Mr. Flora was there, I think, and we talked back and forth for a long time, a couple of hours. They got there about two o'clock. He then made known the purpose of his visit. He came there to see me about closing a deal with me to promote my machinery and to investigate it. I showed him that letter of [fol. 663] Mr. Dyrenforth's that has been introduced in evidence here dated January 9, 1903, and I showed him my working drawings made by Mr. Flora, and they looked at the small set of machines, and at a number of boxes I had made up, boxes which I had made at the Paris Exposition. They were boxes 38 1/2 inches long 24 deep and 24 inches

wide, made of 3/16 of an inch stuff, and we talked for quite a while. I also showed him my patents, all the patents I have, foreign and domestic, in the United States and foreign countries. I laid stress upon my German patents, because it is very hard to get a patent in Germany unless the application is for an invention new and useful.

397 I had nine patents in the United States. I think I showed forty or fifty I had obtained in foreign countries. I showed them a lot of correspondence I had principally with parties in Europe, in relation to the enterprise. By "they" I mean Mr. Robinson, Mr. Lavenberg and Mr. Inwood. I asked them if they ever saw any wirebound boxes before, and they said they had not, it was a new thing, and it struck Mr. Robinson as a promoter very forcibly. He said he was ready to close a deal with me. He said, I am quick to decide, I will close a deal now. I said I was not ready now until I had had time to draw up a license and set of terms and agree upon them. At that time they already had their South Bend option, but this was in reference to the United States. I said to them I was not ready to close the deal then, and then they went. We had this talk at the first meeting, the 25th of March. They had already procured an option from me, four days before that I sent a contract of promotion to Mr. Inwood at South Bend. He had the option on March 21, 1904. I understood that Mr. Robinson was working with Mr. Inwood at the time I sent that contract on March 21, 1904. I had not met him before. I dealt with Mr. Inwood.

Q. What conversation did you have with Mr. Robinson, Mr. Lavenberg and Mr. Inwood on the occasion of the meeting of March 25th, concerning the patents and the exclusive license you say you held from the Michigan Company?

A. I explained the whole thing to them, how the thing stood. I told them I had an exclusive license from the Illinois Company, a little company started in Chicago years ago, but which had gone out of business. I said I had a large set of machines,—I had there a small set,—and they were not running then, not in operation, but they were there to be seen.

398 The machines which I now mentioned were the ma- [fol. 664] chines covered by the patents and exclusive

license held by me from the Michigan Company. I said I had a large set of machines built in 1898 by Rosback and that these machines were stored with Mr. Rosback. I told him that I had lost confidence in Mr. Rosback's inventive ability to build a machine, that I had had a good deal of trouble with him and had been employing Mr. Flora in his place. I said the machine was up to Mr. Rosback's now, and you can go up and see it. I said I did not regard them as a good commercial machine but for sample boxes to be circulated around while the good machines were being built. Mr. Inwood remained there and Mr. Lavenberg and Mr. Robinson returned back to South Bend. At this meeting I showed all my title papers to the patents to Mr. Robinson, and after looking at them a little while he said that is all right. He said, I see you have everything all right. All the patents included everything I had. There was the Knudtson and Uhri patent, then there was patent No. 608,809, and then there was about eight or nine patents granted to myself by the United States. These patents related to the same subject-matter covering the manufacture of machines to manufacture wirebound packing boxes. Concerning the contract that had been granted by me to the South Bend Company, Mr. Robinson said he would organize a company very soon to be called the South Bend Healy Box Company, and take a license for them, but they wanted a little time to look around and see other people. The South Bend Healy Box Company had an unexecuted form of license for the South Bend territory attached to the option, and they were entitled to it upon fulfilling the terms. The license to the patent rights which I have detailed were embodied and embraced in the license which I have mentioned. Mr. Robinson and Mr. Lavenberg appeared to be very well satisfied with the enterprise and they went home. Mr. Robinson was ready to close a deal right there with me, right there and then for the whole company, and he already had the South Bend option. And then the next day Mr. Inwood and myself went up to Mr. Rosback's, and I showed him the old large set. I asked Mr. Robinson and Mr. Lavenberg if they wanted to go and Mr. Robinson said he did not care to, he wanted to go home. I took Mr. Inwood up there and I said Mr. Rosback is a builder and inventor, and like all inventors he sets a good deal by his own inventions. I

said he will praise his machine up, but I don't think it is a good machine.

At the meeting on the 25th of March, I stated to Messrs. [fol. 665] Robinson, Inwood and Lavenberg that I was the owner of the patent rights conferred upon me by the exclusive license which I have described, from the Michigan Company. During the course of that conversation it was proposed between these gentlemen and me that the company which they should organize at South Bend should become the licensee from me of these several patents,—there was no talk about that at all, because they already had their contract in regard to that. It was further proposed
400 that they should accept from me certain territory in which the business which it was proposed to be transacted under these rights should be promoted. When this meeting of March 25th was ended, Mr. Robinson told me when he was going away, he said he expected to form a company very soon at South Bend to carry on this business of manufacturing wirebound boxes under my patented machines. I also at that meeting told them about the box itself. I told him there was a patent issued by John Howenstine and that he gave a license to Henry Stephens, but it did not cover the box with solid ends, like that in Exhibit "A," but covered a box with intercellular ends, and we were all sorry we did not have a patent on the box, which was more important than the patent on the machine, but I told him at that time that it was represented to me that the box was covered by that other one which was manufactured with intercellular ends, but that my attorney gave me an opinion that the solid ends was not covered by the Howenstine patents, of which he had a license, but that the solid ends was a better box than the intercellular end.

* * * * * * *

403 The old set of Rosback machines contained three, a box-blank machine, a step-miter machine, and nailing machine. Mr. Rosback built those. They cost me about six thousand dollars to build, cash. I leased those machines to the South Bend Healy Box Company. The lease was verbal, but the provisions for leasing them was in writing, in the contract of March 21, 1904. I agreed to the

provisions verbally. Regarding delivery of the machines to the South Bend Healy Box Company, those machines were loaded on the cars by Mr. Rosback at the expense of Messrs. Robinson and Inwood and sent to South Bend by my permission and direction and delivered to them under their lease—under their license, rather. By the way I got a little ahead of my story there. At the time when I sent them, the South Bend Company had a license from me. They got a license the 25th of April or 21st of April, I forget which, and under their license I charged nothing for [fol. 666] the building of these machines. They paid me nothing although they cost me six thousand dollars. I made no charge for their use, except I was to get a three per cent. royalty provided for in the license. I put these machines in for nothing because I did not regard them worth much. To the best of my recollection, the South Bend Healy Box Company was organized the 21st of April or 25th, I think the 21st, and they got their license on the 25th.

* * * * * * *

404 That license is still in force, and they are making me monthly reports.

To establish a plant for the manufacture of boxes, the South Bend Healy Box Company as a corporation rented a place for a factory and proceeded to go ahead to manufacture boxes. That is now a going concern. They are manufacturing boxes every month, wirebound boxes, and they pay me a royalty. On the output of that factory they paid me a royalty for January, February and March. They have not paid me any since, and claim they are hard up, and ask for leniency, and I have not pressed them. They are owing us some for royalty now. As to whether the South Bend Healy Box Company paid me on the total output of their plant, I only know by the reports.

405 Q. If you temporarily went to stop at South Bend at any time, while this South Bend Healy Box Company has been engaged in the manufacture of wirebound boxes, you may so state and when?

A. I went to South Bend to reside there temporarily on the 30th of April, 1904, and I stayed there the greater part of the time up to the 20th of September, 1904, when I returned to Chicago.

Q. What conversation or conversations if any did you have with Messrs. Inwood, Robinson and Lavenberg during your stay in South Bend respecting the business of the South Bend Healy Box Company?

A. We talked about it every day. When I arrived there I went to board at the Oliver House, and then Mr. Inwood very kindly found a boarding house for me that I liked better. It was in the same house where he and his family were living.

He had two or three rooms on one side of the hall, and I had one room on the other side. My bed-room door was about six or seven feet from his sitting room or parlor door, so we were back and forth continually.

I considered that I was on friendly terms with Mr. Inwood and his family. He and his family treated me with [fol. 667] courtesy and consideration. I have not a word of fault to find with their treatment while I was there.

Q. What discussion did you have with Mr. Inwood relative to the plant and the business of the plant of the South Bend Healy Box Company during this stay of yours there?

A. We used to discuss it every day, and the prospect of its succeeding.

* * * * * * *

406 The principal discussion with Mr. Robinson about the business of the South Bend Healy Box Company was about the promotion, and with Mr. Inwood about machinery and getting the factory started in good shape. Mr. Rosback was there until the 8th of June. He was a thorn in all our sides from the fact he did not get the machines running according to his agreement. He did not carry out his agreement; that is to say, he did not get his machines running. The step-miter machine, they got that to running all right, but the nailing machine they could not get to running at all, and the box-blank machine after a fashion. Regarding what Mr. Lavenberg did about the step-miter machine, he commenced to build a new step-miter machine immediately after the factory was opened, probably about the 10th or 15th of May he commenced the building of a new step-miter machine, and it did good work. It step-mitered the cleats before they were put on

the blanks, which was different from the Rosback machine.

406 Q. What was the fact as to whether you were on friendly terms with Mr. Lavenberg at that time?

A. I think I was with all of them, and Mr. Robinson and all of them. I never had any friction at all. We had some discussion about making bargains as all business men do, each one trying to do the best for himself, but when the bargains were closed, we were all right, and hand and glove. Our interests were then identical. For instance Mr. Inwood got me a ticket into the club, the local club, there, and Mr. Robinson took me over there several times, and took me out driving oftener than I wanted to go, because I did not want to ride behind horses. I was afraid to ride behind horses.

* * * * * * *

Mr. Rosback was there until the 8th of June. He got there about the first of May. The machine that Mr.
407 Lavenberg built was put to the use of step-mitering the cleats before fastening to the blank. Up to that time we used the Rosback machine on the boxes that they made.

[fol. 668] I think it was the 10th or 12th of May,
408 somewhere around there, Mr. Inwood got acquainted with Mr. Brown of St. Joe. Mr. Brown was known all around the country for thirty years as the inventor of stapling machines, and St. Joe is a well known centre for stapling machines.

* * * * * * *

Upon returning there, Mr. Inwood and myself called on Mr. Brown. He was the superintendent of the St. Joseph Iron Works, and we talked to him, telling him what we wanted. Mr. Inwood had already told him, and I told him again. I told him what position I held, that I was the patentee, and had given Mr. Inwood and Mr. Robinson a license. Mr. Inwood made him promise to came over and see the machine, and so he came over to South Bend on the 24th of May to see the Rosback machines, and he was there quite a while during the day, I think two or three hours, and while he was there, I talked to him again, and

I told him if there was any invention in the machine he was going to build——

426 The paper marked "Complainant's Exhibit 28" handed me is an unexecuted license that was annexed to what we call the Milwaukee option that I granted to Mr. berg on the 27th day of June, 1904. To state briefly the facts connected with the granting of this contract for promotion to Mr. Lavenberg for the City of Milwaukee, a few days before that I went around to see Mr. Lavenberg. I saw him every day, and I saw he was becoming a very important man there, that he was getting up some things in the lines of inventions, and that he would be an important man in the enterprise, and I said to him, I have given an option to Mr. Robinson and Mr. Inwood for some considerable territory to promote, and your name is not in it.

437 A day or two after I had this conversation with Mr. Lavenberg I saw Mr. Inwood and said Mr. Inwood, why didn't you give Lavenberg an interest in the nine cities, he is just as important here as any of you, why didn't you let him in. Mr. Inwood said he didn't think of it. He said, I will see Mr. Robinson about it. I saw Mr. Inwood a few days after and he said he had talked to Mr. Robinson and they did expect to give an interest to Mr. Lavenberg, but did not tell me how much of an interest. Well, I said, I have given Mr. Lavenberg an option. And then I heard from Mr. Lavenberg afterwards that he had given the promotion of the option to Mr. Robinson. [fol. 669] Q. If in the fall of 1904 you visited the Exposition at St. Louis with Mr. Inwood you may state the fact, and state what you did there in connection with this business.

A. My first trip was June 10th to 21st, and when I was going I gave Mr. Inwood the use of my bed-room to work on some drawings that he and Mr. Lavenberg were getting up for an adjustable former to be used on box blank machines.

Q. Do you know whether he used it or not?

A. I do, from the fact that he told me he did, and I found his tools in there when I returned home. I found his little table that he had for drawing on my table.

441 Q. What did Mr. Lavenberg have to do with experimenting with the former?

A. Well, they were experimenting there all the time. During the time that Mr. Rosback was there, Mr. Lavenberg did not do very much about experimenting. He thought he ought to let Mr. Rosback try it. He said Mr. Rosback was using a file all the time, and spoiling the machine. Mr. Lavenberg told me after a machine is once made, and adjusted a file should not be used. After Mr. Rosback left Mr. Lavenberg took hold of it and began experimenting on a former upon the Rosback machine.

* * * * * * *

453 Exhibit No. 42 shown me is a letter written to me by R. G. Inwood, dated July, 8 1904.

Exhibit offered in evidence as "Complainant's Exhibit 42" and reads as follows:

South Bend, Ind., July 8, 1904.

W. P. Healy, St. Louis, Mo.

DEAR SIR: I enclose a letter to you which I opened by mistake. I was expecting a reply from that firm relative to Mr. Lavenberg's coming here Sunday and recognizing their envelope opened same without reading address. I trust you will overlook my carelessness this time and I assure you the mistake will not occur again.

The new step mitre is working nicely and we are now making the small Russ box on the former. This appears to be the best way of making the box and according — the prices received at this date will reduce the cost of cleat lumber from $20.00 per M to about $5.00, and I think will give us a better made box. The work of the next few days will determine this beyond doubt.

[fol. 670] Mrs. Inwood is expected home this afternoon. Wishing you an enjoyable visit and perfect health, I am,

Yours very truly, R. G. Inwood.

* * * * * * *

455 Exhibit No. 44 shown me is a letter written by R. G. Inwood to myself on July 11, 1904.

Letter offered in evidence as "Complainant's Exhibit 44" and reads as follows:

South Bend, Ind., July 11th, 1904.

Mr. W. P. Healy, St. Louis, Mo.

Dear Sir: In reply to yours of 10th inst. we are sending you by express a small Russ box made on the new step mitre and former. In this box the tops and bottoms are lapped instead of being creased and folded. You can look the box over and kindly write us as to your opinion on making the boxes this way. We can make them either way but the sample sent you saves one step in the manufacture, viz: the cutting of the crease and as the corners are always square, it adds to the appearance of the box.

Lavenberg was in St. Joe Sunday and reports the stapling machine as finished except assembling and will be ready to ship within a week. The box blank machine is guaranteed to be done by Aug. 1st and possibly sooner. Will try to go up to Mishawaka for blue prints this afternoon.

In regard to why boxes were not shipped to Mr. Porter sooner, Mr. Lavenberg states that you told him not to hurry in shipping them as you did not care to have them laying around there too long, so he got them ready for shipment and was waiting for further instructions. Mr. Robinson and myself supposed they had been sent. However, they are all at their destination now and I guess the delay has not interfered materially in any way. In the box to you — asked Mr. Lavenberg to enclose one or two step mitered cleats so you could see the class of work the saws are doing. This will be improved upon, but as they are now I believe them to be a marked improvement on the cut made by knives. Note the accuracy of the cutting.

I forwarded two letters to you Sunday—one from E. E. Flora and one foreign.

Mrs. Inwood and Louis returned as expected Saturday. Harry Robinson is still in Louisville and reports good progress. Mr. S. M. Robinson has returned from Cincin- [fol. 671] nati and informs me he has written you regarding his trip. He has a man now working in Cleveland, Ohio, and is certainly spending both time and money in the interests of the box.

Yours very truly, R. G. Inwood.

Mr. Porter, mentioned in Exhibit 44, was the general manager of the New England Box Company, with head-

quarters at Greenfield, Massachusetts. He came to South Bend to see me, and also to see Messrs. Robinson and Inwood, and I think Lavenberg. He wanted to get the exclusive right for New England and New York City to introduce my box machines there, and he was there in South Bend for half a day, probably three-quarters of a day, and was entertained very nicely by Mr. Robinson and Mr. Inwood, and they talked to him about the enterprise as well as myself. Mr. Robinson took Mr. Porter to the base ball game, and Mr. Inwood and myself, I believe.

* * * * * * *

493 As to what inventions had been made by Mr. Lavenberg or Mr. Inwood on the 15th day of August, 1904, up to that time they had informed me that they had the adjustable former completed, the invention of that. Mr. Inwood informed me of that and so did Mr. Lavenberg, and then there was the lap box. That was a method of making box blanks, so that when folded, to cause them to lap. That was completed by that time. I was led to believe then from a conversation with Mr. Inwood—at that time, I did not suppose that the lap box, that the method of making the blank so that the blank when folded would lap, the sides of the box would lap, I did not suppose that it was an invention then because Mr. Inwood told me he did not think it was an invention, but I believe it is an invention now, from what my patent attorney tells me, Mr. Bulkley, of the firm of Bulkley & Durand. And then there was a stepmiter machine that was completed then; and also the box blank machine with the traveling stapler. Mr. Lavenberg informed me that he had invented it by the 15th of July, 1904. I asked him what time did he make that invention, and he told me. Now, that is all I know of at that time.

* * * * * * *

519 I went over to St. Joseph about October 5th, as far as I can remember now, to see the St. Joseph Iron Works people, and also to see the Saranac people about [fol. 672] building another box blank machine for me. I saw Mr. Brown on that occasion. I returned to South Bend on the morning of the 6th of October with Mr. Craig and Mr. Ray of the Saranac Machine Company. I took them up there to show them the box blank machine then in operation in the South Bend Healy Box Company, to show them that

so that they could get an idea what I wanted. They were to build a box blank machine for me, and I took them to the factory of the South Bend Healy Box Company to exhibit to them the machine built by the St. Joseph Company.

* * * * * * * *

552 Exhibit No. 93 shown me is a letter written by Mr. Lavenberg to myself October 22, 1904.

Letter offered in evidence as "Complainant's Exhibit No. No. 93" and reads as follows:

South Bend, Ind., Oct. 22, 1904.

W. P. Healy.

DEAR SIR & FRIEND: Yours received last eve, and as my wife is sick it was impossible to come over today, and I am afraid I cannot come Monday, but will do the best I can. Would like to know when you expect to leave St. Joe, as I want to see you. I wrote you on the 17th and directed to Chicago; presume you have not got it as yet. There were 3 of Chicago's best box makers over to see us make boxes yesterday, one is Pres. and the other Sec'y of the Box Association and Box Mfg. and say we have the only machine that will do the work. As a wire bound box maker I can run out 1500 to 1800 per 10 hours of full blanks easy. If I should not get a chance to come over I could express your trunk to you or check on some one else's ticket. I can do as you like about it and will when I hear from you. Inwood is expecting to go to California soon for his health. He is afflicted with the asthma very bad. He and Robinson wanted me to let them know when you arrived in So. Bend. I told them you would not come again as they did not use you right.

Trusting I will see you or hear from you soon, I am,

Yours resp., P. C. Lavenberg.

Exhibit No. 94 shown me is a letter written by me to Mr. P. C. Lavenberg, dated October 22, 1904.

Letter offered in evidence as "Complainant's Exhibit No. 94" and reads as follows:

[fol. 673] St. Joseph, Mich., Oct. 22nd, 1904.

Mr. P. C. Lavenberg, South Bend.

DEAR SIR: I was disappointed in your not coming over here today, and I hope that you will come next Monday

afternoon, as I am to stay here several days and I desire to talk to you about several matters. The end machine is now finished at the Saranac and works very finely.

I desire to help the South Bend Healy Box Co. and that it will not get mixed up in my controversy with Robinson & Inwood. These gentlemen evidently desire the contrary.

Hoping to see you here next Monday, I am,

Yours truly, W. P. Healy.

* * * * * * *

567 There was no former on the Rosback machine, but Mr. Lavenberg invested a former for it that he made boxes on it with, but it was not a part of the machine, the original machine invented by Mr. Rosback. There were quite a number of what we call Russ boxes made on that machine.

The wire bound box machine was a new and useful device. The step-miter invented by Mr. Lavenberg was, to the best of my knowledge, new and useful. The only reason that I valued it at $300 was because it was not a fundamental patent. We could not get a fundamental patent on the step-miter machine, that is the only reason I valued it at $300.

As far as I know, the box blank machine with the traveling stapler is a new and useful invention.

Q. The box blank that can be folded so that the ends lap, the machine that makes that, is that a new and useful invention?

A. Yes, sir, it is new and useful, the box blank, that is the method of doing the work.

* * * * * * *

574 At the time I placed my machine in the possession of the South Bend Healy Box Company, there was no wirebound box machine in existence other than my own. There was none as far as I could find out in the civilized world. I talked to a great many people who were interested in the manufacture of packing boxes, people from all parts of the world, Australia, Japan, South America, Mexico, all the countries of Europe and people from different parts of the United States.

[fol. 674] Q. What was said, if anything, by either of the defendants with whom you have talked as to whether there was in existence any such machines other than your own, at the time you put these machines in the possession of the South Bend Healy Box Company?

A. Each and every one of the defendants, that is to say, Mr. Robinson, Mr. Ladley, Mr. Inwood and Mr. Lavenberg told me that they didn't know of any such machine, and Mr. Robinson when I first met him, in the course of his conversation said that was the only thing that induced him to go into the thing, because it was a new enterprise, that he never knew of any such machines before.

* * * * * * *

576 Cross-examination.

By Mr. Pickens:

* * * * * * *

577 Q. What other property, if any, had the Illinois corporation at the time it conveyed to the Michigan corporation than the property described in the articles of conveyance?

A. It had the right to take out patents under the Uhri inventions in foreign countries, reserved that right.

It had no tangible property. All the tangible property had been conveyed to the Michigan corporation. Upon that conveyance it was without property and insolvent. That was its condition, unless the one-half of one per cent royalty would bring in an income. It never did bring me any income. Our hopes went glimmering.

* * * * * * *

579 Q. Whom did you first employ, that is, your inventor or expert, to work on this matter of inventing wirebound box machinery?

A. Well, do you mean myself individually or the company?

Q. Well, you and the company, after you went into it?

A. When I joined the company on the 15th of September, 1894, Knudtson and Uhri were then supposed to be the inventors of the company, and then on the first of January they dissolved, and Mr. Uhri continued for one year,

during 1895. In the latter part of 1895, I dropped them and the company could not go any further, and then I went on my own hook and I employed Mr. Rosback, and I kept him until the fall of 1900.

Q. How many of these nine United States patents and sixty-one foreign patents were taken out by you under the [fol. 675] invention made by Knudtson and Uhri or either of them?

A. By myself individually?

Q. By yourself or the company either?

A. There were two Knudtson and Uhri patents, one in 1892, and one in 1894, and there was one Uhri patent taken out in 1898, and about six or seven Uhri patents taken out in Europe and the remainder were taken out by Mr. Rosback.

We employed Mr. Rosback the beginning of 1896. He then had a shop at 61 Canal Street, I think was the number. Mr. J. W. Dyrenforth recommended him to me as a perfecting inventor, and he had a small machine shop
580 at 60 or 61 Canal Street. I employed him after I had taken charge of the matter personally. He was not in my employ at all as an expert or inventor, but I let him the contracts and he built the machines and charged me so much an hour for building them. He was building or attempting to build machines for me for the making of wirebound boxes from the beginning of 1896, up to the 8th day of September, 1900. He was then with me at the Paris Exposition, and then went home, he and his wife, and he has not been in my employ since, excepting that in 1903 he made an improvement to the box-blank machine for which I paid him $175, and he made another improvement to the nailing machine after that, for which I paid him $15. He made improvements to the Uhri machine for which I got a patent. He then invented a box-blank machine himself for which I got a patent, and he made improvements upon that machine on which I got three patents. And then he invented two step-miter machines, one had a reciprocal motion and the other continuous, and he invented a nailing machine. That makes eight, all relating to the wirebound box business. He quit work for me the 8th of September, 1900. He was with me at Paris, supervising my machine at the Exposition, and he started for home that day.

I next employed in the business a Mr. E. E. Flora, a designer and inventor, also recommended to me by Mr. Dyrenforth. About the word "employ" I don't know. I did not employ him, but he came and saw my machines and I gave him an option to promote them in Chicago. He did work for me in reference to getting up new improvements. That was done on contract. He was quite a while getting up working drawings for the nailing machine, stepmiter and box-blank machine, and it took quite a while to get those up, and it cost me about $1200, these drawings. I had a connection with him off and on, and that is to say, [fol. 676] he would come in and see me about the inventions say from 1901 until we went down to South Bend in 1904, but he was not in my employ. He was not doing any work, there was not much work for the first three years. He was working on these drawings say nine or ten months or a year. I got one patent from Mr. Flora on box-blank machine.

As to the next man, inventor or expert employed to get up improvements on these machines, I had Mr. Edward Craig and then I had Mr. Brown of St. Joe. Mr. Craig did certain work for me on inventions for me, but not in this suit. I have had two other gentlemen inventing for me since the commencement of this suit.

In connection with my employment of experts or inventors, and in taking out patents upon the inventions and improvements that they have made upon this box-blank machinery, I think it cost me over $10,000 with Mr. Rosback, and the patents cost about $15,000, ase near as I
582 can figure it up, in this country, and in foreign countries, paying taxes in Europe and proving up the work which is quite expensive, and my connection with Mr. Flora cost me about $2,500, including the working drawings. I did not pay anything to Knudtson and Uhri, working drawings. I did not pay anything to Knudtson and Uhri, except what the company paid them. About $62,000 is my own personal expenses.

As to the money I expended in obtaining or attempting to obtain improvements upon any new machinery with reference to the manufacture of wirebound boxes, the patents cost about $15,000; Mr. Rosback $10,000; Mr. Flora $2,500.

On the 21st of March, the option was given to Robinson and Inwood, and on the 26th of April, 1904, a license was given to the South Bend Healy Box Company. Up to that time I had obtained not a dollar in profits on all this outlay that I had made to get improvements upon wirebound box machinery. I had not at that time succeeded myself or through any of the experts that I had working for me in getting any machines which would make commercial wirebound boxes.

* * * * * * *

583 During the years I have mentioned, while interested in the wirebound box business, I did not give my whole attention to it. I had other matters to look after also, but I gave considerable attention to it. Since the beginning of the year 1904 to the present, I have practically given all of my attention to these matters. In addition to the wirebound box business, I have my own private business [fol. 677] that takes my time to look after. My mind was upon matters relating to the wirebound box business, and the various contracts and leases, a good deal of the
584 time. I had invested in the enterprise a large amount of money, which I was endeavoring to get back, or a part of it anyway, out of the wirebound box business.

* * * * * * *

586 As to the tangible property other than patent rights, at the time of its sale to the Michigan Corporation, the Illinois Corporation had the Knudtson and Uhri machine which they built and conveyed to the company, Knudtson and Uhri did. I guess that's about all the company had at that time. I know they hadn't a desk or chair or table to write upon.

Q. Did they have any shop or real estate or machinery other than this machine?

A. That is all, and that machine was not good for anything.

* * * * * * *

The Michigan Corporation had an office in the place where we had our shop, and we bought some veneer. I paid about $700 for veneer out of that $6,000. We expected we were

going into the business right away to sell boxes with the set of machines made by Uhri, and it was not good for anything when we tested it.

587 We made no further efforts to make boxes, not with that machine, the company made no further effort.

* * * * * * *

589 In the fall of 1901 I gave Mr. Flora an option over Cook County, something similar to the option I gave all the other parties. I renewed it several times. I think it ran into 1902 or '03. I think it ran all of the summer of 1902, and into 1903. He did not accomplish anything on it. He put in quite a good deal of labor. He did not organize any company. No boxes were manufactured under that option by anybody. He had my set of machines I had in Paris, a little set that we made some sample boxes with. He did not succeed in selling any boxes, never sold a box. He simply went around to have investors look at the machine. As to options I gave other than those I have testified about, I gave Messrs. Clow & Hale an option in Indianapolis, and I gave an option here to Mr. Clark in the law firm of Callahan & Company, and a Mr. Callahan who was a Justice of the Peace. The option to [fol. 678] the Indianapolis people was given the first of November, 1901, and then I renewed it several times. I gave the option to the lawyers here in this city about a year and a half ago. I think the beginning of 1904. It was the latter part of 1903, I gave it to him and Judge Callahan, I think he is a Justice of the Peace here.

590 I gave another option to Judge Callahan for Omaha about the same time I gave one to Mr. Clark. I gave an option to Mr. Goodhue to try to promote it down in Atlanta.

Nothing has come of these various options insofar as manufacturing boxes for commercial use is concerned. They have not been because I am not a promoter myself I don't know how to promote. I was looking for promoters all the time.

At the time Mr. Rosback and Mr. Flora were experimenting they had access to my patents on my machines and everything that I had accomplished in the way of patents on machines for the improvements on wirebound boxes from

which to work to make their improvements. They were never able to accomplish anything so far as making commercial machines was concerned,—that is, they never did do it, whether they were able or not, I don't know. They were recommended to me by my patent attorney as competent inventors. There is one that my patent attorney would not recommend now, that is Mr. Rosback.

591 The first time that I met Mr. Robinson in connection with this business was on the 25th of March, 1904, in this city. I never heard of him before. Mr. Inwood was present on that occasion. Mr. Robinson was ready to make a contract then and there. I did not tell him at that time that these machines were commercial machines. I told him they were not commercial machines, expressly. I told him that none of the machines that had been patented were commercial machines. I told him what patents I had, and that certain machines had been made under those patents.

Q. And you tell us that after you had told him that and also told him that no machines that were commercial machines had been made, that he said then and there promptly that he was ready to go into the business to promote a non-commercial enterprise?

A. Yes, sir. He did not place any reliance at all upon the old set of machines, but he relied upon the certificate given by Mr. Dyrenforth that I controlled the art, and we all agreed that we could find a man who would get up a machine to do that work. I told him I had lost confidence in Mr. Rosback's ability, and had let him go, and had taken up with [fol. 679] Mr. Flora, and I had more confidence in the work of Mr. Flora.

The next day after the conversation with Mr. Robinson and Mr. Inwood, Mr. Inwood and I went to Mr. Rosback's place of business and looked at the old machines.

601 I got back from St. Louis the 21st of July. I place that by the fact that it was a couple of days before I gave the Cleveland option, and that was the 23rd. I think it was about the 30th of June that I went to the St. Louis Exposition, or the first of July, somewhere around there.

612 "Official

World's Fair, St. Louis, 1904

July 1st, 1904.

R. G. Inwood, Esq., South Bend.

DEAR SIR: I arrived here safely this morning, and find the weather as agreeable here as in South Bend."

* * * * * * * *

614 None of the machines which have been made under those patents up to the time that the Robinson and Inwood option was given, were of any value, I regret to say. I regret to say I have never made any money or any profit out of them. I have been putting in the greater part of ten years of my life in trying to make money out of them. I attended to some other little things. Two companies, the Illinois Corporation and the Michigan Corporation, have been organized which have tried to make something out of them
615 and could not. They didn't have money enough either. I am about $62,000 worse off than when I began, but I have hopes. I base the value of $25,000 upon hopes, with my knowledge of the business. It is not exclusively on hopes. Well, hope comes into everything, but I think I have got the best machine now that is on the market. I do not know of any on the market except my own, and I have got it all right now, and it is a very big thing when we get it started, and I have heard a great many people say the same thing. I can submit correspondence to you from very prominent men in Europe and the United States. The Knudtson and Uhri patent 518,038 is a fundamental patent, and covers all other patents and dominates them, issued since that time. The date of that patent is April 10, 1904, its life is seventeen years, and it has six years yet to run. [fol. 680] It has run eleven years, has made nobody any money, has bankrupt two companies, and has lost me some $62,000. With the six years I think it is going to get around to be worth $25,000. I think it is worth a great deal more than that. I think we will get this thing started soon now, and then make a pile of money out of it. I will state right

here that the defendants tried to get it away from me and failed——

Q. What other oral contracts did you have, if any?

620 A. The contract,—let me see,—I directed Mr. Inwood verbally to get a step-miter machine built by the Sandage Steel Skein Company for not more than $125. That was a verbal contract until the Sandage people wanted it in writing, and they sent Mr. Inwood to me for a written

621 authorization which I made, and he carried that to them. And then I told him to make a bargain with Skein Company for a box-blank machine. He made all the details,—that is, I employed him verbally to deal with them until I sent the final order to them to build the machine. That was in writing.

. . . . . .

(b) Certain parts of the deposition of William Osterhout, on plaintiff-appellee's opening case, which deposition was commenced on September 6, 1905, and concluded on the same day, are offered in evidence as follows:

DEPOSITION OF WILLIAM OSTERHOUT

628 WILLIAM OSTERHOUT testified as follows:

Direct examination.

By Mr. Healy:

I am 42 years of age, reside at 50 Robinhood Avenue, Lakehood, Ohio, and am salesman for the Cleveland Box Company. I have been connected with the Cleveland Box Company for ten years. I know George W. Ladley and Samuel M. Robinson, defendants in this case. As near as I can come to it, I first met Mr. Ladley about May, 1904, in the office of the Cleveland Box Company. I had some conversation with him.

Q. State whether it related to the wirebound box enterprise of the complainant in this case, Mr. Healy?

A. He so represented himself at that time.

Mr. Healy: I will state to the gentlemen on the other side, and to the reporter, that I will speak of myself in the third person.

[fol. 681] Witness: As near as I can recollect it Mr. Ladley was trying to interest us, or trying to show us rather in the first place, a proposition which he had for the manufacture of packing cases made of veneer bound with wire.

629 He had a small box with him, showing the style of the package, and then he went on to explain the workings of the machine. As to whether he spoke about the owner of the patent, and so on, I know he mentioned Mr. Healy. He stated that the machine made the cleats of the box on the machine and cut the miters in after the box-blank was formed. This was his original conversation that you are asking me about.

. . . . . .

633 When we arrived in South Bend, Mr. Ladley was the first gentleman we met. I went to the Hotel Oliver, a short time after that, and met Mr. Robinson at the hotel.

Regarding what I did in South Bend with Mr. Robinson and Mr. Ladley, after our first being introduced to Mr. Robinson, he informed us that Mr. Healy was not feeling very well, and, therefore, we would probably not be able to see him that day. He stated furthermore that owing to the fact that Mr. Healy was of a rather peculiar disposition, and a man that you could not cross, as he could afford to be in that position, owing to the fact that he was a man worth four or five hundred thousand dollars, and that probably we would not be able to see him. There was nothing said about ten million dollars at that time. But he said that he would have a carriage there shortly, and we would go to the factory where they had the machines in operation. We were taken out there in due course of time and showed the machines. We saw in operation there a machine that was called a box-blank machine. To describe the operation of making box-blanks, as I saw it on the machine on that day, the box cleats were laid in a frame and the veneer or cleats were in the first place mitered before put in this frame, which by the way we had been informed of that method

before that by Mr. Ladley, as he said there had been changes made in it. I could not swear as to whom he said
634 made the changes. The cleats were step-mitered, and laid in the form, the four parts of the box, the sides of the box, were laid onto the form, and the entire form passed under stitcherheads, or stapling heads by means of a rack and pinion. It was passed through the machine by means of a rack and pinion, a rack on the form and a pinion under the [fol. 682] table to carry it through under the stapling heads. It was an intermittent motion, so as to allow the heads to come down and staple it. We were at the factory in the morning, an hour and a half, to two hours.

Q. And what did you do after that with Mr. Robinson and Mr. Ladley?

A. Then we went back to the hotel and had dinner and was then taken up to the—now, let me see. My memory don't serve me right there, whether—we either went out to Notre Dame from dinner and then back to the factory or went to the factory and from the factory to Notre Dame, I cannot say which, but we were back to the factory in the afternoon. It seems to me that we went to Notre Dame first, and then came back and stopped at the factory on our way back, and possibly was there a half or three-quarters of an hour. I cannot say just exactly the length of time.

Q. Well, then, did you have any other meeting in the evening, or did you go away that evening?

A. Yes, sir, that evening we were taken out to, I guess it was the ball park, went out there to see some fire works, and then came back from there to the Hotel Oliver, and stayed there talking until, I think my train left there at eleven o'clock, I think that is the time my train left there.

I never saw nor heard of any other wirebound box machines before I saw those at South Bend. I have been in the box trade ten years, and am always on the lookout for improvements on boxes. That is the first I knew of a wirebound box.

* * * * * * *

(c) Certain parts of the deposition of Charles T. Williams, on plaintiff-appellee's opening case, which deposition was commenced on September 6, 1905, and concluded on the same day, are offered in evidence, as follows:

DEPOSITION OF CHARLES T. WILLIAMS

642 CHARLES T. WILLIAMS testified as follows:

Direct examination.

By Mr. Healy:

I am 66 years of age; reside in Mayfield Heights, and occupation, box manufacturer. I am manager of the Cleveland Box Company, which position I have been in ten years. I have also been a stockholder in the company, I will say nine years, and am now holder of a pretty large proportion [fol. 683] of the stock. I am acquainted with Mr. Robinson, who is in the room here now. I am also acquainted with Mr. George W. Ladley, one of the defendants in this case. I first met him at the same time Mr. Osterhout named, if it was May, I cannot remember the month. I had very little conversation with him then. I passed him over to Mr. Osterhout, my machine man. I had other business then; I did not have very much conversation with him. I knew I would get the details from Mr. Osterhout.

. . . . . .

663 I did not know of any other wirebound box machines that were on the market at the time Mr. Ladley called on me, except the Healy machine.

. . . . . .

(d) Certain parts of the deposition of Norman E. Brown, on plaintiff-appellee's opening case, which deposition was commenced on September 15, 1905, and concluded on the same day, are offered in evidence, as follows:

DEPOSITION OF NORMAN E. BROWN

675 NORMAN E. BROWN testified as follows:

Direct examination.

By Mr. Bulkley:

I live in St. Joe, have lived there about 35 years, and I am engaged in machinery, manufacturing machinery.

I am connected with the St. Joseph Iron Works and have been for twenty years. The specialty of the St. Joseph Iron Works is fruit package machinery. We do some making of special machinery which is made for customers who desire machines to do a particular kind of work. The company has made special machinery for making crate sides and machines of that character.

682 Q. I will ask you also to look at this sheet of drawing, Mr. Brown, and state whether or not that shows or illustrates the former or workholder which was made by you?

A. This (indicating)?

Q. No, particularly Figure 6 of the drawings?

A. Well, I should say that is sort of a former that we built there in our shop.

Mr. Bulkley: The sheet of drawing which is shown the witness and identified by him is offered in evidence and marked "Complainant's Exhibit 118."

[fol. 684] Drawing offered in evidence, marked "Complainant's Exhibit 118, Holway, Notary," and is in words and figures following, to-wit:

(Here follows Complainant's Exhibit No. 118, side folio 684½)

* * * * * * *

684 I think the company took the machine which we built at the request of Mr. Inwood, I don't know. I completed the machine. I did not deliver it, it was taken away. I don't know, I have never seen the machine since.

Q. I will ask you, Mr. Brown, to look at the cut of the box-blanking machine contained in this catalogue, which I show you, and state whether or not that looks anything like the machine which you made, concerning which you have testified. I refer to the cut of the machine on the top of the page or upper portion of the page.

A. Yes, it resembles the machine.

Mr. Bulkley: The catalogue shown to the witness containing the cut, and identified by him, is offered in evidence, the upper portion of the 4th page; the name of the catalogue being "The National Wire Bound Co."

Fig. 5.

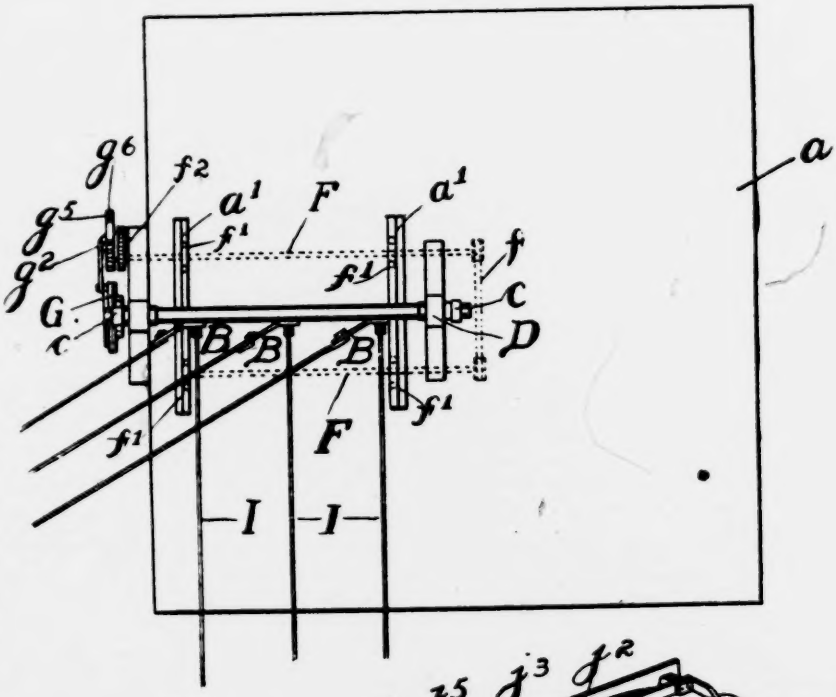
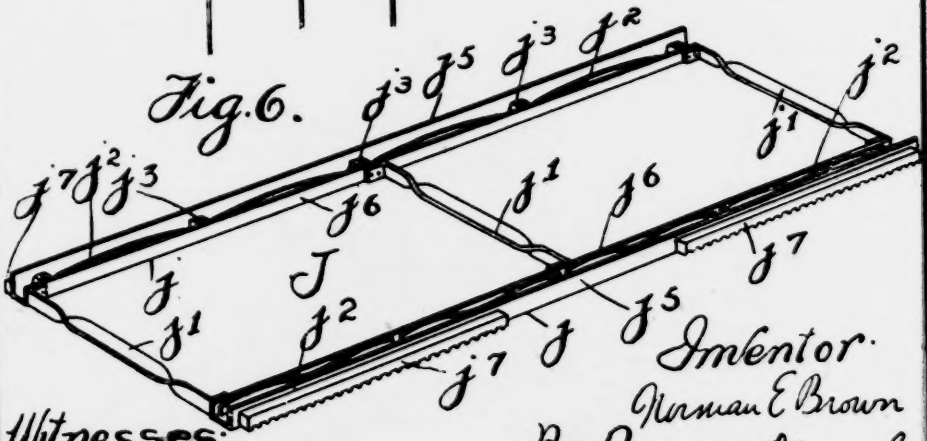


Fig. 6.



Witnesses:
J. B. Weir
Robert H. Weir

Inventor.
Norman E. Brown
By Bulkley & Durand
Atty.

Complainant's Exhibit No. 118 from Healy Record.

Cut of machine offered in evidence marked "Complainant's Exhibit 119, Holway, Notary," and is in words and figures following, to-wit:

* * * * * * *

Extract from Complainant's Exhibit 119, Holway, Notary

702 In submitting the foregoing pages to the box makers of the United States we can safely say that there is no one man engaged in the box business who is better known than the Honored Henry Stephens of Chicago, Ill., and below we take pleasure in presenting you with a copy of his letter:

Henry Stephens, Rooms 1601 and 1602 Marquette Bldg., Chicago, Ill.

November 7, 1904.

G. W. Ladley, Indianapolis, Ind.

Dear Sir: In reply to your favor of the 6th inst., would say that some years ago when I was interested in the Wire Bound Box I succeeded in having a machine made that would make sample boxes only. In other words after spending seven thousand dollars and nearly two years time, I failed to get an inventor that could produce a practical machine, but at that time expected every month [fol. 685] to have a machine to do the business, and on the strength of that I commenced to introduce the new boxes to consumers and testing the strength of these boxes by actual use, to-wit: I shipped a box containing 320 lbs. of brick and mortar by freight to New York City which, after a month, arrived in perfect condition and was a surprise to everyone who saw it. Now just think of a box made of only three-sixteenth inch veneer carrying 320 lbs. while it would require a box made of seven-eighth inch lumber to perform like service. I also gave sample lots to consumers for trial as follows:

Armour & Company, J. V. Farwell & Company, Standard Oil Company, Markley Alling & Company and a number of others now forgotten. Each and every one gave the boxes a thorough test and indorsed all I claimed for them and signified their desire to buy as soon as I started up but,

as you know, I never got the machinery to make them. However I now claim, as I did then, that this patent box is twice as strong and only weighs half as much as the old style boxes, having had the experience in several patent boxes and after having manufactured the old kind of boxes for over twenty years I can honestly assure you that your Wire Bound Box is the coming box.

Would be glad to give any farther information pertaining to this matter.

Yours very truly, Henry Stephens.

Cross-examination.

By Mr. Murphy:

* * * * * * *

704 Mr. Inwood talked with me on the question of building a machine for the manufacture of wire-bound boxes. At the first visit that I was there, we talked about the machine, and I think afterwards, every time, pretty nearly that I saw him, he was there on that business.

Q. At which visit did Mr. Inwood leave an order for a machine with you?

A. Well, now, I cannot tell you that.

Q. He did leave an order for a machine, did he not?

A. Yes, he did leave an order, or the Company, as I understood it. I don't know that Inwood was alone at that time particularly, but there were two or three men there.

He explained a good deal of the sort of machine they wanted.

Q. Do you remember how he described the machine to you at that visit?

[fol. 686] A. Well, the first or second time that we talked about it, he talked about using the machine that we were building there, and then when I came to look it up and see what we could use in it, and what they wanted to do, I advised the building of a new machine, out and out. But the plan was to follow——

Q. Just a minute. I asked you, Mr. Brown, when Mr. Inwood left an order for a machine if he described to you what he wanted?

A. He described to me, yes, sir.

He described the component parts of the machine by what he wanted to do, what he wanted to do with the machine, as I understood it.

Q. Could you tell me just what he said?

A. This thing, this machine was under construction for quite a long time, and many visits——

Q. Confine yourself to just this one visit, Mr. Brown.

A. I cannot. All there was. The first thing was to make a machine to do this work.

Q. Mr. Brown, the machine that you finally built, is it not true that the machine consisted of what is known or called there a workholder or former?

A. Yes, sir.

Q. And of a stapling machine in conjunction therewith?

A. Yes, sir.

At Mr. Inwood's first visit I think the machine which he described to me had a workholder attached to it.

705 When he left the order for the machine, there was to be a sort of former to lay this stock up in that it could be passed through the machine to do the work. Mr. Inwood partially described this former to me at that time.

Q. He said how it should be built?

A. Well, in a good many cases he dictated how it should be built.

I don't hardly think that former was an adjustable former; I don't know that it was.

Q. Do you remember that the first former talked of was a non-adjustable former and afterwards an adjustable former?

A. I know there was a change made in it.

I think Mr. Inwood and Mr. Lavenberg between them made the change; talked it up, and made a change in the machine, and at the same time Mr. Inwood brought a model there. The model that Mr. Inwood brought was made of iron. It was a model for laying up the stock. And in this piece, in this part of the machine, it was a model for laying [fol. 687] up the stock, for getting it into shape.

I suppose that is what is called the workholder or former. You can give it any name you want to. The machine for which he had a model was to be used to hold the material while the work was being accomplished,—while the work was being put through the machine.

Q. Did Mr. Inwood at that time also present to you a drawing as well as a working model?

A. I think he had some kind of a sketch in regard to his idea about that.

Q. A sketch of the machine?

A. Yes, sir.

Q. The machine as contemplated at that time, consisted of what parts, Mr. Brown. This workholder or former was one. Just give a popular description of it?

A. It consisted of the machine for stapling, and the workholder for holding the work through the staplers, such work as might be—it was so arranged to hold the material in place while being so put through the machine.

Q. This working model was a model for a machine which was to be built to hold the work in place while it was put through the machine in order to staple on the wire to the cleats, was it not?

A. Yes, sir; yes, hold the cleats in place.

Q. How did it hold the cleats in place?

A. By sort of a step-miter arrangement with——

Q. Did it have——

Mr. Bulkley: He did not finish his answer. Let him finish.

A. A sort of step-miter arrangement put into channel iron with the former on the side,—I could show you where on the drawing.

Mr. Murphy:

Q. Indicate so that the reporter can get this into the record.

A. The only thing that is in that piece there of my ideas (referring to Figure 6 of Exhibit 118) is these cross-bars (referring to J-1 in Figure 6 of Exhibit 118). Well, I take that back. That rack that is on there (referring to J-7 of Figure 6, of Exhibit 118). That was a part of my ideas on these cross-bars. Now, all this through here, lengthwise, was Mr. Lavenberg's and Mr. Inwood's. They came there together and brought these models. Those little blocks here were in the model that they brought me and the model was in the channel iron.

Q. Mr. Brown, was everything else indicated in the model they brought you, except these cross-bars, and this rack that you refer to?

A. Yes, sir.

[fol. 688] Q. Everything else indicated in Figure 6 of Complainant's Exhibit 118 was in the model other than these three cross-bars referred to, "J-1," and this rack to "J-7"?

A. I think that is all there was.

Q. Will you kindly indicate how the work was put through, that is how the work was laid in that arrangement (referring to Figure 6 of Complainant's Exhibit 118)?

A. Well, the sheet—here was this angle iron,—the sheet of veneer was laid in there, and this being higher on this side than the one on that side, the sheet fitted right in there. Now, we hold the sheet this way and the cleats that it was nailed to laid between these blocks. These blocks formed the cleats around this feed from one block to another block, and they were laid in there on each side, and then this veneer was laid over it, and then the staples was put along in these cleats, all along here on both sides, and then some wires went through here (witness indicated on drawing) (Complainant's Exhibit 118).

Q. Just listen attentively to this, Mr. Brown. It it not true that the cleats were laid in this workholder in a sort of little channel there, that there was something there to keep them rigid?

A. Yes, sir.

Q. Along the channel marked *f*, and F being on either side of the workholder?

A. Yes, sir.

Q. And is it not true that running across the breadth of that workholder there was a little bar to separate the cleats?

A. Separate the cleats.

Q. Those things?

A. Yes, sir.

707 Q. And on top of the cleats was laid the veneer?

A. Yes, sir.

Q. And that veneer with the cleats underneath was sent through the machine as you call it?

A. Yes, sir.

Q. The whole of this (referring to Figure 6 of Complainant's Exhibit 118) is what he gave you a model for, and what is designated as the workholder or former?

A. Yes, sir.

Q. What other component parts of that machine were there, of the whole machine? What was placed right above the workholder?

A. About that, when that was put in place, came the staplers.

[fol. 689] Q. What do you mean by the staplers?

A. The staple maker or driver. The staples drove them in the work to hold those pieces together.

Q. This machine was for the purpose of driving the staples down into this work as it passed underneath?

A. Yes, sir, the staplers, what we call the stapler, staple drivers, were put along in a row as it passed along with an intermittent motion. It would go so far and then staple, and move so much farther and then staple and so travel right along.

Q. How was this workholder moved through the machine?

A. Moved through the machine by this rack.

Q. By the rack which you have referred to as J-7 in Figure 6 in Complainant's Exhibit 118?

A. Yes, sir.

Q. Is this what is popularly known as the feed of the machine?

A. No, not properly the feed, but it might be called a part of the feed.

Q. A part of the feed?

A. Yes, sir. There is quite a good deal more in connection with the feed.

Q. Now, when Mr. Inwood presented you with a working model of the former, did he at the same time present you with a drawing of the entire machine?

A. No, I think not. I don't know that he did. If he did, I have forgotten it. I don't know that I ever had a drawing of the entire machine?

Q. Then this machine, at the time of the visit of Mr. Inwood consisted of a combination of the stapling machine and of this former or workholder that passed underneath?

A. What is that?

(Question read.)

Q. I will change that question. This machine, that was talked about at the time of the visit of Mr. Inwood, when he presented you with a working model of the former or workholder consisted of a combination of the stapling machine and of the former or workholder that passed underneath?

A. Yes, sir.

Q. Who talked with you in respect to the construction of that complete machine?

A. Well, both Mr. Inwood and Mr. Lavenberg.

708 I don't know that I could tell which of these gentlemen suggested the different parts of the machine, the different parts, they were, as I understood it, the ma-[fol. 690] chines of the place, and between them and their suggestions was what I was working from.

I talked this machine over with Mr. Inwood and Mr. Lavenberg from time to time. The entire machine as it was finally finished, outside of these matters that I have suggested I attached to the machine, was the product of the combined ideas of Mr. Inwood and Mr. Lavenberg; that is, except so far as the parts that we used in machines that we have used for years. Say the stapling works. I took out a patent about twenty-five years ago on stapling works.

Q. There were parts of the machine that were old?

709 A. They were put into it. Of course, the patent on that had run out; but we were making the work though.

Q. In this machine which you say was the combination of the ideas of Mr. Inwood and Mr. Lavenberg together, you built there for Mr. Inwood or Mr. Lavenberg or the South Bend Healy Box Company for them?

A. Yes, sir.

Q. At their suggestion?

A. At their suggestion, yes, sir.

709 At the request of one of the defendants, I went to South Bend and saw in operation the old machine that they had, the Rosback machine brought from Chicago.

As I understood it, the purpose of that visit to

710 South Bend was to see if we could do anything to help them out of their dilemma they were in, and look

over the machines there. In the first place it was to do something on that machine, to try to remedy a defect in that machine. The machine did not work very well.

Q. Did it work at all?

A. Why, yes, it made a few blanks while I was there. I don't know how much.

I was there a couple of hours or more.

[fol. 691] (c) Certain parts of the deposition of Rollin A. Rood, on plaintiff-appellee's opening case, which deposition was commenced on September 22, 1905, and concluded on the same day, are offered in evidence, as follows:

DEPOSITION OF ROLLIN A. ROOD

722 ROLLIN A. ROOD testified as follows:

Direct examination.

By Mr. Healy:

I am 32 years of age; reside in Columbus, Ohio; occupation, box-maker. I am general manager and treasurer of the Rood Lumber Company, and also a stockholder. That company was incorporated in 1898. The annual average output of that company say for the past five years, one year after the other, is $100,000. I know Mr. Ladley, one of the defendants in this case, and first met him a year ago last July, or the first of August, I don't just exactly remember which. On the occasion of my meeting him, he came into our office, came there twice before he was able to find me in, and he then said that he wanted to propose, or wanted to show me a *a* new kind of box, and he showed me a box that he said could be made at less cost and better than the average box. And after telling us all about it, the different advantages and so forth he proposed to organize a company. He showed me a wirebound box that he proposed to me to organize a company for. It was a wirebound box with cleats on the ends to stay it, and keep it from breaking, and they were to be sewed with
723 staples. It looked just like this cut on the front page of Complainant's Exhibit 119.

* * * * * * *

He stated it was a new enterprise, a new box. From my own experience, it was new to me. I had been in the box trade since 1896. The business of the Rood Lumber Company is making boxes and eratings, and that has
724 been the business since 1896, packing boxes and eratings. We take all the periodicals relating to the box trade, I guess, and are on the lookout for improvements in boxes. I state, that as far as I am concerned, it is a new enterprise to me.

* * * * * * *

[fol. 692] (f) Certain parts of the deposition of William P. Healy, recalled, on plaintiff-appellee's opening case, which deposition was commenced on November 2, 1905, and concluded on the same day, are offered in evidence as follows:

DEPOSITION OF WILLIAM P. HEALY, RECALLED

749 WILLIAM P. HEALY, complainant and cross defendant, recalled for further redirect examination, testified:

Redirect examination.

By Mr. Simms:

759 Complainant's Exhibit "C" handed me, is a box made by myself at No. 213 East 57th Street, in the City of Chicago, some time after the first of October, 1901, and before the first of April, 1903. I cannot tell, I did not keep track of the date of making these boxes. In other words, it was made while I was at that number, and at that place where I kept my small set of machines, and had them there to exhibit to prospective investors who came to look at the machine. That was made by the Rosback machine exhibited at the Paris Exposition. This is a box which I have produced, to be kept closed all the time, because the other box introduced in evidence is open, and when the wires bend back it will break, and, therefore, I have closed this box. This is empty inside. This box, well, it is made

from the box blank that was made by the box-blank machine known as the Rosback machine, and it is made of veneer one-eighth of an inch thick and step-mitered cleats at the end, and it is bound with three wires. The edge of the cover overlaps the sides of the box, and on the back edge of the cover overlaps in the middle of the box, but not entirely so at the two ends. But I will state that this
760 is an old box now, and has shrunken somewhat since it was made. That is to say, the edges are exposed there in the bottom of the box, but it laps to a certain extent in the middle of the box where the metal wire goes. The metal wire makes it overlap the sides. This box was not made any later than the first of May, 1903. It was not made any later than that, because I moved out of that shop over to 5646 Lake Avenue, and I did not make any boxes there at all; I did not have my machines set up.

It overlaps at the center on the back side of the lid, but not so completely at the ends.

[fol. 693] Q. State how it laps when it was first made.

A. I think it lapped; I know it lapped better than it does now, because it has shrunken; it has been kept in a very hot, dry place; sometimes I had it very hot, and where I moved to 5646 Lake Avenue, it was very hot there also. I kept it very warm by radiators there during the winter time I was there, and it has shrunken a 32nd or a 64th of an inch, probably a 16th of an inch at one end, and probably a 32nd of an inch in the middle.

There is no difference between the box I have been testifying about, Complainant's Exhibit "C," and the lapped box constructed later by another machine by the South Bend Healy Box Company. The box made by the South Bend Healy Box Company, which was invented or gotten up in June, or the 7th of July they began to make them, 1904, and which was gotten up by Mr. Lavenberg, as he informed me himself, had a lap all the way around. In other words, the edges of the cover overlapped the sides and so the edges of the bottom of the box overlapped the sides. Now, the box made by the South Bend Healy Box Company overlaps—the front edge of that box overlaps the front side precisely similar to the way that the cover of this box here, Exhibit "C," overlaps the front. But in the back edge of the cover the South Bend box, Mr. Laven-

berg's invention, it overlapped better than this box does. This overlaps imperfectly. This overlaps very well where the metal wire comes. That is the difference. In
761 other words, this makes a perfect overlapping of the front edge of the cover and overlaps imperfectly and some place not at all in the other edges of the box. The front edge does not overlap at all, but the lower, here, overlaps the front edge of cover.

The difference in reference to the overlapping between the two boxes is only one of degree. I might add while I am at it, I think I made about one thousand of these boxes from the first of October, 1901, to the first of April, 1903, and gave them away to different parties. Gave some to Mr. Robinson and Mr. Inwood; sent them down to Arkansas, at Mr. Robinson's request, and other place, sent a large number of them around the country, and gave quite a number of people boxes made precisely like that, excepting that there was not two pieces in front like that (indicating), it consisted of but one entire piece.

The principle of overlapping was the same, except that some did not overlap as well as this one in the back of the box or bottom, but they all overlapped as well on the front edge of the box or cover of the box.

* * * * * * *

[fol. 694] Recross-examination.

771 By Mr. Pickens:

* * * * * * * *

773 Q. That Rosback machine that was shipped down here would not make commercial boxes?

A. Yes, sir, but not fast enough.

* * * * * * *

775 Q. In your testimony today about this box marked "Exhibit C" you called attention to the fact that the lid of that box, which is the side on which the reporter's mark as an exhibit is in pencil, had lapped corners?

A. One edge laps nicely.

Q. One edge lapped nicely, and the other edge lapped at the center, where the center wire goes around the box; at the two ends it is not nicely lapped?

A. No, sir, it is shrunk there.

Part of the reason that occurs is the fact that the wood has shrunk. This box did lap more or less all of them, except in the front. They lapped as good as any other box, and always did. I have used them commercially. I have shipped goods in them.

Q. The two corners that you called attention to, being the corners where the lid fits down on the box, are the only corners on this box where there is any appearance of lapping, is there not?

A. I think there is a lap on the bottom where the middle wire goes around, but not so good as the lid, the front of the lid.

Before this box was folded, when it was a mere box blank, it laid out straight like one piece of board with cleats along one edge of it, and then it is folded in order to make the box.

Q. Now, the way that board, after it was complete as a box-blank, the way it was made, being a straight board with the cleats fastened on it, in folding it it was impossible to make lapped corners, is it not?

A. No, sir, there was a part of the wood that was left. The scoring by the step-miter machine did not go clear through, and that portion that did not go clear through would lap, but where the wood was cut away, it would not lap. That is a self-evident mechanical proposition. If the scoring of the step-miter went clear through then these corners would not lap.

776 In the manufacture of the box-blanks by the Rosback machine, the cleats were step-mitered after they were fastened on the veneer. Then there was a groove cut along through the veneer at the point where it was to fold, but not cut clear through the board. That was for the pur- [fol. 695] pose of having the blank fold, and the Rosback step-miter machine cut that groove.

Q. The machine that made the step-mitering, would that cut the groove through the board?

A. Yes, sir,—not through the board, but along the board.

The shape of that groove was kind of round, it scooped out a piece of the board like the letter U, and then it was folded. The part that was not cut through would make a lapped corner, but, of course, it would not be a perfect lapped corner, like the front of the box. It would be like the corner of this box in Exhibit "C". Some of the boxes lapped better than that box, some of them did.

777 The box marked Exhibit "A" was made in the same way by the same machine. Some are better than others. I think that is a fair average, unless sometimes we had poor wood which did not make so good a box. This box laps very nicely in the corner on the lid, as good as any box could. The box will show for itself; it is not a perfect lap, I don't claim that at all.

Q. One of the difficulties about the attempt to make a lap upon the corners of the box made by the Rosback machine, is exhibited on one of the corners of the box which is in evidence as Exhibit "A," that is the difficulty arising out of the fact that the grain does not run parallel with the corner of the box.

A. Yes, sir, that is some of the wood, other wood does not. I want to state we have been making these lapped boxes since 1896, and I suggested to Mr. Rosback to make them lap here in front, he could not do that behind in the other places, he could not do that, and I did not like the bevel edges of the box made by the Knudtson and Uhri machine, which I had rejected since the first of January, 1897, and had been making boxes like this in evidence.

Q. I show you another box, Mr. Healy, of the same size as the box marked Exhibits "A" and "C," and ask you to look at it.

A. Yes, sir, this box was made by myself, I think, or probably by Mr. Flora or Mr. Inwood, a great number by myself, and this also laps.

Q. That was made by the same machine?

A. Yes, sir, and made before the first of May, 1903.

Q. You say that also laps?

A. The same as this, yes, sir.

Q. The same as this?

778 A. Well, the wood there on account of the grain, it turns over and makes a tight box. You can call

[fol. 696] it lapping as you please. I would not call that lapping on that corner excepting the lid.

Q. There is nothing lapped on the box except the lid?

A. That's what I think.

It was made by the same machine as the other boxes, but it is not a duplicate of them. It is a duplicate of the wood having the grain running like that.

Mr. Pickins: I will ask you to mark this "Exhibit Z."

(The box was so marked.)

Q. Mr. Healy, while we are on this box question, I want to call your attention to another matter in connection with the boxes. I see in this box, marked "Exhibit C" that the staples that hold the wire around the middle of the box are practically all of them mashed down before they have been driven clear through?

A. Yes, sir.

* * * * * * *

(g) Certain parts of the deposition of Richard G. Inwood, on defendants-appellants' opening case, which deposition was commenced on November 2, 1905, and concluded on November 15, 1905, are offered in evidence as follows:

DEPOSITION OF RICHARD G. INWOOD

795 RICHARD G. INWOOD, one of the defendants, called as a witness on behalf of the defendants, and the cross-complainant, testified:

Direct examination.

By Mr. Pickens:

I am forty years of age, and reside in South Bend, Indiana, where I was born and raised. Part of the time I lived in Chicago. I lived in Chicago perhaps seven or eight years. I am one of the defendants in the bill of complaint in this cause. I first met Mr. Healy at his place of business, on 57th Street, Chicago, in the fall of 1901. At that time, when I first met Mr. Healy I was experimenting

with a process for etching zinc plates, a new process for making four color plates for printing newspapers. The circumstances under which I met Mr. Healy the first time were that I called to see Mr. Flora, who was working in Mr. Healy's place of business. I expected to go to work for Mr. Flora. He was a mechanical expert, and I had worked for him two or three years prior to that time. At the first time [fol. 697] I met Mr. Healy, nothing was said to me by Mr. Healy or by Mr. Flora in the presence of Mr. Healy as to what connection Mr. Flora had with Mr. Healy, but at other times both of them explained the connection that they had. They said that Mr. Flora was employed by Mr. Healy to set up the small set of Rosback machines, and
796 place them in running order and to exhibit them at Mr. Healy's request to prospective purchasers or prospective licensees, for which services Mr. Flora was to receive $1,000 of the first money received by Mr. Healy from the box enterprise.

I took employment with Mr. Flora as clerk, in December of that same year. My duties included anything that Mr. Flora asked me to do, typewriting and stenographic work among other things. I worked for Mr. Flora from December 20th, 1901, until February, 1903, or pretty near February; about a month or two I was on the road as salesman, perhaps October, 1902, and November, and between November and February I worked for Mr. Flora at times. I was not associated with Mr. Flora in any other way than as employee. I returned to South Bend in February, 1903. After that I returned to Chicago in October, 1903 and I worked for Mr. Flora at times and made Mr. Flora's office my headquarters until February, 1904. During the time I was working there for Mr. Flora, he was trying to promote, to bring investors to Mr. Healy.

At one time Mr. Healy paid me at the rate of $2.50 a day for making ink tracings of pencil drawings. At this time I was receiving from Mr. Flora thirty dollars a week less the amount paid me by Mr. Healy in currency. The way that came about was that Mr. Flora had contracted with Mr. Healy to finish a set of working drawings at a certain time and for a certain price. Mr. Flora was
797 employed to finish the drawings at the time specified and he lost money on the transaction. Mr. Healy,

in order to help Mr. Flora out suggested that he would pay Mr. Flora, if Mr. Flora would put on an additional draftsman, to finish the work. I was not a draftsman, but I was able to satisfactorily make ink tracings of pencil drawings made by another draftsman in the employ of Mr. Flora.

Mr. Flora had an option from Mr. Healy in connection with those wirebound box machines, extending about a year and a half, and under that option other options were given by Mr. Healy to other parties at Mr. Flora's request.

The pencil drawings of which I made ink tracings were all of details or small parts of machines. I did not know [fol. 698] what they were any of them, or their office, and in fact had no knowledge of the work I was doing, other than that I was making ink tracings of pencil drawings. I had no interest whatever in the option that Mr. Flora had from Mr. Healy.

I did all the clerical work that would arise in connection with assisting Mr. Flora to organize companies under the option. I wrote out the options on the typewriter and I wrote letters obtaining the cost of sawed lumber for boxes and the cost of veneer, and when figures on the cost of making boxes was asked by prospective investors I furnished those also. And in this respect I would say that I would usually ask Mr. Healy for the cost figures on boxes, and if there was any difference between the boxes I had made and those made by Mr. Healy I would substitute Mr. Healy's figures for mine.

After the box making business had been installed at South Bend, Mr. Healy did not show me how to make estimates or make costs of making boxes. I was thoroughly familiar with that long before. But Mr. Healy and I at different occasions discussed methods of figuring the cost of making boxes.

* * * * * * *

798 Mr. Healy gave options while I was in Mr. Flora's office of Willard T. Block of Chicago, who was connected with the old Grant Locomotive Works. This option, I believe was for Cook County and also for the United States. Mr. Healy also gave options to Wells & Goodhue of Chicago. Mr. Goodhue had options for Atlanta, Georgia, and Mr. Goodhue had options for Chicago and an option for

St. Louis. Mr. Healy also gave an option to Mr. Bullard of the firm of Bullard & Gormley. Mr. John B. Knight of the real estate of Knight & Marshall also had an option. Also a man whose name I do not know, connected with the firm of Montgomery Ward & Company, in connection, I believe, with Mr. Marshall. Also a lumberman on the 16th floor of the Marquette Building. I do not remember his name. Also Mr. Lewis, who was formerly engaged in the refrigerator business, also Professor Castle of the University of Chicago. Also a banker in Iowa, whose last name was Clark, as I remember it. Also Mr. Pike of St. Louis; also Mr. Clough of Indianapolis, and I believe Mr. Fowler of Indianapolis had an option from Mr. Healy; Mr. Callahan of Chicago and Mr. Clark of Chicago, another Mr. Clark. There was a man from Wisconsin somewhere, associated with Professor Castle. I do not recall his name. Most of these cases were [fol. 699] for options for local territory, but in many of them options were given for the entire United
799 States. Options for the United States patents were given to Mr. Goodhue, and I think one or two of the others. I guess that is all I can think of now.

808 Document offered in evidence marked "Defendant's Exhibit 4. W. H. Holway, Notary Public," and is in words and figures following, to-wit:

"Cable Address,
'Rosback, Chicago.'

Rosback
In

P. Rosback.

General Office,
2529 Leo Street.

Manufacturer of
Multiplex Punchi
Stitchers.
CH
Marc

od
Bend, Ind.
rding your inquiry regarding box ma
, beg to state that same is virtu
809 set of machines, having been operated for show purposes only. It would take approximately ten horse

power to operate same. These machines will make on a conservative estimate about 1000 boxes 40" long by 24" wide and 24" deep in ten hours, with staples three inches apart, and will make a larger number of smaller boxes.

Should you desire to place your order for more machines of this kind it would take me about 60 days to build same, either one machine or a full set of three. The cost of a box blank machine would be Fifteen hundred ($1500.00) and probably $1200.00 for a step mitre and about $450.00 for the nailing machine. I will take down the set of machinery you saw today and set it up in South Bend for you for $100.00 and my expenses. This amount does not include freight or cartage but will include a one half days operation of same and a guarantee that they operate in a first class manner as explained.

Very truly yours, E. P. Rosback, Inventor and Builder of Above Machines.

P. S.—These machines have been operated 8 or 9 hours consecutively without stopping.

Def'ts' Ex. No. 4. W. H. Holway, Notary Public."

[fol. 700] Mr. Pickens:

Q. Mr. Inwood, by reason of the fact that a part of this letter is gone, it does not appear from the letter, as now mutilated to whom it was addressed. I will ask you to state to whom the letter was addressed?

Mr. Simms: I suggest that the question calls for knowledge independent of the paper.

A. It was addressed to R. G. Inwood, South Bend, Indiana.

Mr. Pickens: Well, it was addressed to you?

A. Yes, sir.

Q. Do you remember what the date of it was?

A. March 26, 1904.

Q. Are you able to state what was stated in the part of the letter which has disappeared? It appears from the mutilated letter that a part of the beginning of the first line, and a part of the ending of the first line has disappeared. Are you able to state the substance of what is stated in that part of the first line that has disappeared from the letter?

Mr. Pickens: We have the other copy, and while it is not here, if I had ot here I would hand it to you. It is at
810 the hotel, and we will furnish you the other copy, so that the exact words may go in there.

Mr. Pickens: Have you answered the last question?

A. No. I can give the substance of it.

Q. Have you stated what was said between Mr. Healy and yourself in regard to what it would cost to move the machine down to South Bend?

A. No, sir, not at that time.

Q. If anything was said upon that subject, please state it.

A. Some time later, a week or so later, Mr. Healy again accompanied me to the Rosback plant to make arrangements for the moving of the machines to South Bend, and on the way out or back on one of those trips, I said to Mr. Healy: "From the figures I have got so far, it is going to cost us sixty dollars to get the machines from the Rosback plant to the train, to the car, and it will cost us probably thirty dollars over to South Bend, and sixty dollars over, I believe it was to South Bend, and about thirty dollars at South Bend to move the machines from the cars to the shop, and it will cost us a hundred dollars for Mr. Rosback to come there and another hundred dollars for his expenses, which will make quite a sum. Now, how long will it take for Mr. Rosback, do you think, to get the machines in condition to make boxes commercially." Mr. Healy replied "it will not take more than a week or two," "that they [fol. 701] should be in good shape now, and that he had spent $175 just the summer before for improvements which would overcome all the objections to the working of the machines as he had last seen them operated." I then said to Mr. Healy, "This is quite a little money, and if there is any doubt about the machines working we do not want to go to this expense of moving them over there, but would rather wait until the Flora machine was done. Mr. Healy said there was no doubt in his mind that the machine would make boxes commercially.

Q. What next took place between you and Mr. Healy with regard to this box business?

A. The next time, I believe, I met Mr. Healy was when he came to South Bend on the 30th of March, when I met him at the hotel, I believe, and took him up to Mr. Robin-

son's office, and we went that afternoon to the Dodge Manufacturing Company taking with us the Flora blue-prints.

None of us were able to explain the blue-prints so that
811 their superintendent Mr. O'Hara could understand them, so we left the blue-prints with Mr. O'Hara to be looked over and returned to South Bend. On the first visit, that is, on the 30th of March, Mr. Healy took a written contract to be signed by the Dodge Company. This contract was also left with the blue-prints. In the morning we went out again to the Dodge Company and the Dodge Company had written out a different contract, but quite similar to the one Mr. Healy had prepared, and Mr. O'Hara said he could not make enough out of the plans to estimate intelligently what it would cost, and it was arranged that we would have Mr. Flora come over from Chicago and explain the plans to Mr. O'Hara, and with this understanding we signed the contract. Mr. Robinson, before signing the contract, with the pen in his hand, addressing Mr. Hosford, vice president of the Dodge Company, and the rest of us said, "Now, it is the understanding that when this contract is signed we are to have the United States option, or an option for promoting the box business in the United States."

Q. What did Mr. Healy say to that, if anything?

A. I do not think Mr. Healy made any remark, but Mr. Hosford said, "I understand."

Q. After making the contract with the Dodge Manufacturing Company you may state whether Mr. Healy returned to Chicago or remained in South Bend?

A. Mr. Healy returned to Chicago, I think, the same day the contract was signed.

Q. What was done then towards organizing a local company?

[fol. 702] A. During Mr. Healy's visit on the 30th and 31st of March, a new option was given to Robinson and Inwood in the place of the option which Mr. Healy had sent me before our trip to Chicago on the 25th of March. This option had a blank unexecuted copy of a license attached, and was to be given to the South Bend Healy Box Company as soon as incorporated.

Q. Well, that company was incorporated, was it?

A. Yes, sir, that company was incorporated in April.

Q. By whom?

A. Incorporated by Mr. P. C. Lavenberg, S. M. Robinson, and myself.

Q. Did Mr. Healy return again to South Bend?

812 A. Yes, sir. We telegraphed Mr. Healy when the charter was issued, and within a day or two he came to South Bend.

813 Def'ts' Ex. No. 5. W. H. Holway, Notary Public

"Option for Wire Bound Box License
W. P. Healy to R. G. Inwood and S. M. Robinson
Expires June 21st, 1940

In consideration of one dollar to me, W. P. Healy of Chicago, Illinois, and paid by Richard G. Inwood and Samuel M. Robinson of South Bend, Indiana, on this twenty-first day of March, 1904, nineteen hundred and four, I hereby conditionally grant to said Inwood and Robinson, as hereafter set forth, the right to have and receive from me, upon the completion of the set of machines and patterns, hereinafter mentioned, and payment in full therefor, and not afterwards, a license granting to a Corporation to be organiped by said Inwood and Robinson, and to be called the 'South Bend Healy Box Company,' the exclusive right to use and operate my patented wire-bound box machinery, in the counties of La Porte, St. Joseph, Elkhart, Starke, Marshal, Noble and Kosciusko in Indiana and the counties of Berrien, Cass, Kalamazoo and Calhoun in Michigan, until the first day of July A. D. nineteen hundred and fifteen and in no other place or places for the purpose only of manufacturing wire-bound boxes and shooks and selling them to persons who desire to use them in their own business in said counties or in either or any of said counties, on the condition precedent that the said Inwood and Robinson, shall on or before the twenty-first day of June A. D. nineteen hun- [fol. 703] dred and four enter into a written contract with the Dodge Manufacturing Company of Mishawaka, Indiana, for the building, at the sole cost and expense of said Inwood and Robinson of one set of my patented machines for manufacturing wire-bound boxes and shooks, consisting of one box-blank machine, one step-mitre machine and one nailing machine, and also the patterns for such machines, such written contract to be executed in triplicate and one of such

triplicates to be delivered to me at the time of the execution of such written contract, and such machines to be built and completed according to the working drawings thereof, made by E. E. Flora, designer, No. 1536 Marquette Building, Chicago, except as to size of said machines within a reasonable time from the date of the execution of such contract."

821 Q. I now hand you another document, and ask you to state what it is?

A. This is the license issued on the 26th day of April, by William P. Healy of Chicago to the South Bend Healy Box Company.

Q. Hand it to the reporter and have it marked Defendant's Exhibit 6.

(Witness complies and it was so marked.)

822 Mr. Pickens: I now introduce in evidence Defendant's Exhibit No. 6.

Document offered in evidence marked "Defendant's Exhibit No. 6, W. H. Holway, Notary Public," and is in words and figures following, to-wit:

"This License and Agreement, hereinafter called this license, made this twenty-sixth day of April, A. D. nineteen hundred and four, between William P. Healy of Chicago, Illinois, party of the first part and The South Bend Healy Box Company, a corporation organized under the laws of the State of Indiana, party of the second part, Witnesseth:

Whereas, said party of the first part is owner of patents Nos. 608,796, 608,917, 609,630, 614,348, 623,258, 630,303, 636,968 and 704,478 granted by the United States of America, and Whereas, said party of the first part is sole licensee for the United States, for the whole of the unexpired terms of patents Nos. 518,038 and 608,809 granted by the United States, and all of which patents cover machines invented for the purpose of manufacturing wirebound packing boxes, and Whereas, the said party of the second part is desirous of engaging in the manufacture and sale of wirebound [fol. 704] packing boxes in the counties of La Porte, St. Joseph, Elkhart, Starke, Marshall, Noble and Kosciusko in the State of Indiana, and the counties of Cass, Berrin, Kala-

mazoo and Calhoun in the State of Michigan, and for that purpose desire to acquire the exclusive right to use and operate such patented machines of said party of the first part in said counties, and promises to use reasonable diligence in manufacturing such wirebound packing boxes and selling them to box consumers in said counties only.

1. Now Therefore, in consideration of the payments to be made by the said party of the second part to said party of the first part, as hereinafter specified, and of the covenants, conditions, and agreements to be observed, kept and performed by said party of the second part, as hereinafter set forth, the said party of the first part hereby grants to the party of the second part, the exclusive right to use and operate the wirebound box-blank, step-mitre and nailing machines aforesaid, in said counties of LaPorte, St. Joseph, Elkhart, Starke, Marshall, Noble and Kosciusko in the State of Indiana, and Cass, Berrin, Kalamazoo and Calhoun in the State of Michigan, and in no other place or places,

823 on the terms and conditions hereinafter set forth, until the first day of July, A. D. Nineteen Hundred and Fifteen (unless this license is sooner terminated, as hereinafter provided) for the purpose only of manufacturing wirebound boxes and selling them to persons who desire to use them in their own business in said counties, or in either of said counties, and in no other place or places, and the party of the second part shall not knowingly sell or deliver any such boxes to those who intend to resell them to others, nor to those who are carrying on business outside the limits of the said counties and who intend to use said boxes outside the limits of said counties.

829 Q. After the execution of said license, which has been just introduced, what was done by the South Bend Healy Box Company towards establishing a plant, if anything?

A. At the time of the—read the question please.

(Question read.)

A. We had already rented a room in the plant of the Kestner Manufacturing Company of this city, and had installed or were installing there the line shafting, saws, engine and other apparatus for making boxes.

829 [fol. 705] The Rosback machines were shipped from Chicago and arrived at South Bend just about this time, and Mr. Rosback came to South Bend about the first of May and remained here some six weeks or more working on the machines trying to get them in order to make boxes. The machines were set up in the plant immediately after their arrival, it taking about a week to get them set up. Mr. Rosback did not assist in setting them up, but arrived after they were set up, and went to work on them. He remained here about six weeks.

830 After he got here and the machines were set up, he worked with the machines very faithfully towards making boxes. He was there early in the morning and worked until late, and was wholly unsuccessful in getting any one of the three machines to work commercially. The nailing machine he did not get to work at all, and the step-miter machine and the other machine never ran satisfactorily for more than five or ten minutes without breaking down, and the work which they done was imperfect always. There was never a box made on the Rosback machines; the boxes were all tinkered with and finished by hand.

The difficulties in the box-blank machine that prevented the making of boxes commercially, were that in the first place the machine was very poorly constructed. It was a very complex machine with a multitude of parts, which were not securely fastened, and were too delicate, in some instances, to stand but a few minutes use. The mechanical principles involved in the machine were also wrong, so much so that if the machines were placed in good order, other than I have stated, it would not do, and could not do good work.

The defects in the work turned out by the box-blank machine were that the machine would not drive the staples down to the wood on the upper side and would not clinch properly on the lower side. The sheets of veneer were constantly crawling one over the other for the reason that the cleats and veneer were pushed from the rear end of the machine to the staplers by pushers, and would push the last sheet of veneer or any intermediate sheet, if it happened to be warped, over on top of the sheet next to it, sometimes so that it would wedge in the machine and break some of

The mechanical defect in that machine, that prevented it properly driving the staples and clinching them, which is also a defect in the mechanical principle of the machine, is that the staples are clinched on the under side of the blank by striking a solid steel anvil which had a small cup [fol. 706] or two, small cuplike indentures made in its surface, which indentures were intended to change the course of the leg of the staple so that it would bend over
831 and fold over the side of the indenture and crawl up back into the wood again. These cups were so small that the staples would not strike them on going through the wood, and when the staple would strike the steel, if it struck the cup in any but the one proper place, the resistance on the under side of the blank would be greater than on the upper side, and instead of driving the staple through, the staple would flatten out and spread over the upper surface of the veneer. In the Rosback machine the staples were clinched on the cleats or cleat part of the veneer as well as on the center wire, so that the objection held to all the staples.

Again the mechanical principle of the machine was wrong in the staple-driving part, in that the part of the machine which drove the staples was a thin rod of steel, as I remember it, not over an eighth of an inch in diameter,—it was not exactly round but circular, one-eighth of an inch in diameter covering a section of the staple-driving part of the machine. This was continually breaking on account of its small size.

Q. What other mechanical defect was there in the staple-driving part of the machine with reference to the movement of the veneer at the time the driver struck the staple?

A. The movement of the veneer through the machine was a continuous movement, and the staple forming and driving mechanism was mounted on bars parallel to the work and hung over a shaft or axle at the top of the machine, the principle of the machine being that the staple-drivers would engage with the work as it went through the machine, and while the work was being engaged by this mechanism, the staple would be driven and clinched on the iron anvil beneath, and a swinging arm or pendulum would then release the work and swing back through an arch, as it came through, and holding it while the

staple was driven, releasing again and swinging back, while the veneer kept going through continuously. We found that it was an impossibility to construct a machine which can be timed so that the swinging of the pendulum and the driving of the staple will occur at the proper time in relation to the traveling of the blank through the machine. In this machine Rosback was unable at any time to correctly time the machine in this respect. The trouble resulting from this in the work would be that the staple [fol. 707] would be crowded or pushed either forward or backward and not drive directly through the stock.

832 When not driven directly through the wood, the result upon the staple would be that the staple first would be driven through the stock so that it would not hit the small cup in the anvil, and secondly, it would be crowded to one side making an imperfectly formed staple on the top of the veneer.

The mechanical principles in the step-miter machine were entirely wrong, for the reason, first, if the veneer or box should be warped it would not cut a groove in the veneer where the corner of the box should come when folded of equal depth. In some cases the knives would cut clear through the veneer and an inch or two further along miss the veneer entirely, and an inch or two further along from that make a groove or cut in the veneer of unequal depth. So that, when the box was folded at that corner it would not be cut enough in some places to make a corner at all and in other places would leave a hole in the box. And the knives were continually cutting the wires on the stapler and would last but a short time, possibly seventy-five or a hundred blanks, when it would be necessary, to do good work at all, to take the cutters out of the machine and sharpen them, on account of their cutting through the wires. This would take perhaps an hour or two, perhaps several hours.

And again the blank was fed into the machine by a number of endless chains, and these endless chains were moved by a gear which was attached to a heavy casting weighing a ton perhaps, and this casting again was moved by a gear, the gear being moved by a sprocket and chain, and the sprocket chain was some ten feet in length passing over three or four sprocket idlers, so that the sprocket

chain was unable to move the ponderous machinery without breaking which it did very frequently. Several different chains were tried by Mr. Rosback to get one that was strong enough, and when he left the machine a sprocket chain was broken which was the cause of his stopping.

The Rosback nailing machine was for the purpose of nailing the ends of the box in after the blank had been folded, and it was supposed to drive all the nails at one blow, driving and nailing from the outside through the cleat, through the end of the box and clinching on the inside.

833 That machine was pretty much all defects. I do not know what the mechanical principles of the machine were that were wrong, except that it never done the work [fol. 708] it was intended for. I was present at the time Mr. Rosback threw up the job. At the time Mr. Rosback quit there was some question arose between Mr. Rosback and myself regarding the final test of the machine under his guarantee, and a question also of our paying an additional bill, which he had presented for some work done in his shop. Mr. Rosback admitted in this interview—He said during this interview that he could not make the test of five hundred boxes running consecutively in half a day, and that he would give up the job and go home. After Mr. Rosback went home Mr. Lavenberg worked with the machines until in August sometime and was unable to get any work out of them or remedy their defects, and we also employed Mr. Brown of St. Joseph, Michigan, a mechanical expert, to come over there and suggest means of fixing the machines so that they would run. We had Mr. Eeklund come over for the same purpose.

834 That is the Mr. Brown and Mr. Eeklund of the St. Joseph Iron Works, and we also had Mr. Howard of the St. Joseph Iron Works over to South Bend, trying to get the machines so that they could be operated to make boxes, but Mr. Howard was unsuccessful. We also had a Mr. Green, who represented himself to be a good man at mechanical matters, and a machinist. Mr. Green was unable to make the machines work. Mr. Brown came over the first time in the latter part of May, and Mr. Brown came over the second time in the latter part of June, and

Mr. Ecklund came with Mr. Brown the second time. I believe Mr. Ecklund came over again; I don't remember the date. And Mr. Howard came over,—I don't remember when Mr. Howard came, but he came to attach the Brown stapler heads to the Rosback machines to see if he could get it to work by using them.

* * * * * * *

839 As to what became of the Rosback machines that were shipped down here, the step-miter machine and the nailing machine were given by Mr. Healy to Mr. Lavenberg's son to sell for junk, and he sold them to the scrap iron man, and the box-blank machine was dismantled and is standing in one corner of the factory of the South Bend Healy Box Company or the National Wire Bound Box Company, I should say.

* * * * * * *

839 Q. Now, you may state what the relations were between Mr. Healy and yourself and your associates, Mr. Robinson and Mr. Lavenberg after the time Mr. Healy came to South Bend to reside, where he lived, and what communications you had between each other?

[fol. 709] A. Mr. Healy came to South Bend and went first to the Oliver Hotel. He told me he would like
840 to find a boarding place, a less expensive place to live——

Q. I don't care about going into the details about getting a boarding place and so on, but where did he finally locate himself?

A. In Mr. Marsh's residence, where I was living with my family. He had one room on the second floor, and I had a suite of rooms across the hall. We were very friendly with Mr. Healy in a social way, and I did everything in my power to make Mr. Healy's stay in South Bend pleasant and agreeable to him. We had consultations, a great many of them every day, social conversations.

Q. Did you have any consultations or talks about the box business?

A. Yes, we had a great many. Most of them were about the box business. They were mostly in the nature of dis-

cussions. I would report to him what had been done in the factory and what we intended doing and we would discuss the matter.

841 My first trip to St. Joe, Michigan, with Mr. Healy was May 12th. We made that trip to St. Joe for the purpose of purchasing veneer. Mr. Robinson, Mr. Healy and myself went. Mr. Robinson and Mr. Healy went to Coloma, Michigan, while I remained in Benton Harbor.

Q. What did you do while you remained in Benton Harbor?

A. In looking up veneer I went into the plant of H. G. Thayer & Company, and while there I saw some stapling machines at work. I stood where I could see perhaps eight or ten of these at one time and watched them for about three-quarters of an hour, and observed that they worked without tinkering and continuously. I inquired of Mr. Thayer where the machines were made, as I thought that the stapler was an improvement on the Rosback. Mr. Thayer told me the machines were made by the St. Joseph Iron Works. I took the car and went over and met Mr. Brown at the St. Joseph Iron works. Mr. Brown took me out into the shop and showed me some ten or twelve varieties of machines in which the staples are made of wire and driven in the veneer and lumber. Mr. Brown also showed me photographs of perhaps forty or more varieties of stapling machines, special machines which he had made for other parties, and he also gave me some folders with cuts of different machines.

After getting through at St. Joe, I then went to Benton Harbor and met Mr. Healy and Mr. Robinson, who had re- [fol. 710] turned from Coloma. I bought some veneer of Tully & Company I had found, and brought Mr. Robinson and Mr. Healy back with me to the plant of the St. Joseph Iron Works. I there introduced Mr. Healy and Mr. Robinson to Mr. Brown and on the way over there I told Mr. Healy and Mr. Robinson that I was going to show them some machines, and I wanted them to take special notice of them, as I thought I had a plan for adapting parts of them to our use in the business in South Bend. On our arrival at the plant, Mr. Brown, Mr. Healy, Mr. Robinson and myself went into the factory building, and Mr. Brown showed us the workings of his staple forming and driving

mechanism and I called Mr. Robinson's and Mr. Healy's attention to the climax basket machine manufactured by that company. I also called their attention to the crate stapling machine for stapling the tops of crates, and this investigation was continued until the train left.

Then we returned to South Bend, and on the eve-
842 ning of that day, May 12th, Mr. Healy and myself, after supper, walked over to Mr. Lavenberg's house.

Q. What took place there?

A. On the sidewalk in front of Mr. Lavenberg's house, I exhibited the folders which I had brought with me from St. Joe, explaining in a general way——

Q. To whom?

A. To Mr. Healy and to Mr. Lavenberg,—a plan for making a box blank machine using parts of the crate stapler, and suggesting in connection with this machine, improvements for moving the work through the machine intermittently so that it could be stapled.

* * * * * * *

842 I followed up my investigations of the matters that I was considering with reference to the improvements of the machines at St. Joe. Mr. Lavenberg and myself daily planned out a practical box-blank machine, and on or about between the 21st and 24th of May Mr. Healy and myself went to St. Joe again, and in the office of the company, in the presence of Mr. Healy, I gave to Mr. Hatch and Mr. Brown the details of the machine we wanted made, which was a machine similar to the one they finally delivered to us, except that no former or workholder was used, but a chain-feed was to be employed, and the blank was to be made similar to the blank made by the Rosback machine. I mean by that that the blank would come out from the machine one solid board with the cleats running the full length of the board not step-mitered or scored. Mr. Lavenberg and myself prepared these details, which were delivered [fol. 711] to the St. Joe Iron Works. Mr. Healy did not make any suggestions or present any ideas that went into the preparation of those details. At the time these details were delivered to the St. Joe Iron Works there had not been prior thereto any discussions between Mr. Lavenberg

and me or any considerations by either of us looking
843 to the step-mitering of the cleats before they were placed in the former. There was nothing considered or suggested regarding the step-miter cleats before running through the box-blank machine until sometime in June, perhaps about the 8th, 9th or 10th of June.

There was an order given to the St. Joseph Iron Works for the making of a machine in connection with my giving them the details. At the visit I speak of, when Mr. Healy was present, I gave to the St. Joseph Company the specifications. I would have given them the complete order, but it required the payment of $300. So I told Mr. Hatch, in the presence of Mr. Healy, that I would return home, and mail them a check of the South Bend Healy Box Company for the first payment, and authorized them to build the machine according to the specifications which I had then given to him. On the 27th of May, I wrote this letter, enclosing the check for the first payment and ordering the machine as agreed upon in the name of the South Bend Healy Box Company.

Q. Let me ask you again: I don't know that you understood my question a while ago; perhaps I did not understand your answer. Was there any discussion between you and Mr. Lavenberg prior to the time that you gave the final order for the machine to the St. Joe Iron Works with regard to step-mitering the cleats before they were fed into the machine with the veneer?

A. Well, yes. The idea had been suggested of doing this, and this idea was suggested to Mr. Brown on that visit of step-mitering the cleats, but was disregarded as being impracticable or impossible of operation, and while it came up two or three times, was always passed over as impracticable.

I saw the specifications that were left with the St. Joseph Iron Works providing for cleats extending the full length, or practically the full length of the veneer, when it would be run through the machine, the same as it was in that respect on the Rosback machine.

* * * * * * *

844 On the original order the plans and specifications for the machine ordered from the St. Joseph Iron

Works did not provide for formers. The order was after- [fol. 712] wards modified to use the former. By former I mean a workholder, which consisted of two long strips of channel iron of the right size to hold a cleat 15 16 by 3 4. The purpose of this former was to hold the cleats on the veneer in the proper position to be passed under the stapling machine to be stapled. Workholder would be in my judgment the best term.

Q. What did you and Mr. Lavenberg do, if anything, after the delivery of the specifications to the St. Joe Iron Works and the ordering of the machines with reference to experimenting on the matter of having a former or workholder in the machine?

A. The discussion between Mr. Lavenberg and myself in regard to the practicability of the former occurred almost daily, from the time the machine was first ordered at St. Joe, and we began experimenting along that line to test if the use of a former would be practicable. We worked on this together, Mr. Lavenberg making wooden models of formers with which he experimented, and I made drawings during the time when the machine was ordered
845 at St. Joe, until about the twentieth of June, when we figured that we had the problem of a former solved. On the 20th of June we took the model of the former which we had and the drawings which I had made to St. Joe, and ordered the machine there changed so as to use a former, and the machine was changed exactly according to our plans to use a former, and the former was made identically with our models, and the drawings which we took with us.

The workholder which I have mentioned, the plans of which were delivered to the St. Joe Iron Works, was adjustable, the drawings were for an adjustable workholder. We went down to order the adjustable workholder, but Mr. Brown stated that it would add to the cost of the machine, and would consume a great deal more time in making the adjustable former, and experimenting and getting it to work, so that if we were in a hurry for the machine, we had better have it made with the non-adjustable former, which would demonstrate, as well as the adjustable former, the practicability of the machine, and we told Mr. Brown that he should build the machine with a non-adjustable for-

mer, and after it was delivered to us, we would ourselves make the adjustable former.

846 I reported that conversation or the substance of it to Mr. Healy the next day or the second day after that, in either the factory or in our rooms at Mr. Marsh's, South Bend, Indiana. Mr. Healy had just returned then from St. Louis, and I told him of all that had been done, [fol. 713] and of our ordering the machine of Brown changed to use the former instead of making the blank the other way, and Mr. Healy said that he did not believe the plan was practicable, as it would require three formers for each box, size of box that was made. I told Mr. Healy that we had decided to make the machine that way, and that we could only wait and see what the results of the tests would be.

I prepared drawings of the adjustable and non-adjustable formers. They were shown to Mr. Healy. I had the drawings attested by a notary public, and they were shown to Mr. Healy after they were attested also. I have those drawings here. These are the two sheets of drawings of the former or workholder, and the model was like that (indicating on the drawings).

Q. These two compose one set; they are not separate drawings of different——

A. They are different ways of making a former which we had discussed. That is the first former that was made (indicating), this model at the top of the sheet attested June 15, 1904.

The attestation of the other sheet is June 21, 1904. That is the last, contains the last plans which we discussed for making an adjustable former. These two sheets were the ones I showed to Mr. Brown, and also to Mr. Healy.

846 Q. I will ask you to hand the one dated June 15, 1904, to the reporter and have it marked Defendant's Exhibit 8.

(The witness complied and the paper was so marked.)

Mr. Pickens: I now introduce in evidence Defendant's Exhibit 8.

Paper marked "Defendant's Exhibit 8, W. H. Holway, Notary Public," and is in words and figures following to-wit:

EXHIBIT No. 8

(Here follow side folios 713a and 713b.)

(Original to be used on the hearing.)

Q. Hand to the reporter the drawings you have referred to attested June 21, 1904, and have it marked Defendant's Exhibit No. 9.

(The witness complied and the paper was marked Defendant's Exhibit 9.)

Mr. Pickens: I now introduce in evidence Defendant's Exhibit No. 9.

[fol. 714] Paper offered in evidence marked "Defendant Exhibit 9, W. H. Holway, Notary Public," and is in words and figures following, to-wit:

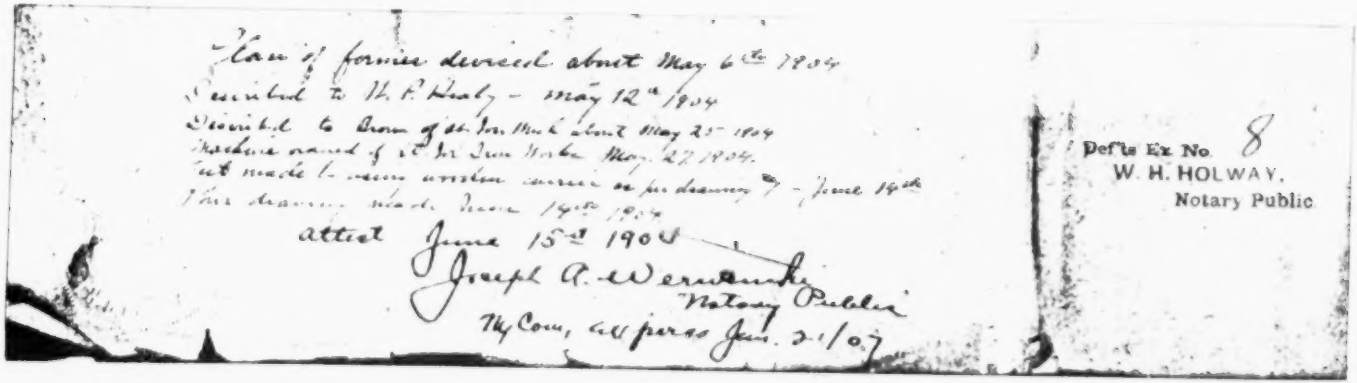
EXHIBIT No. 9

(Here follow side folios 714a and 714b)

(Original to be used on the hearing.)

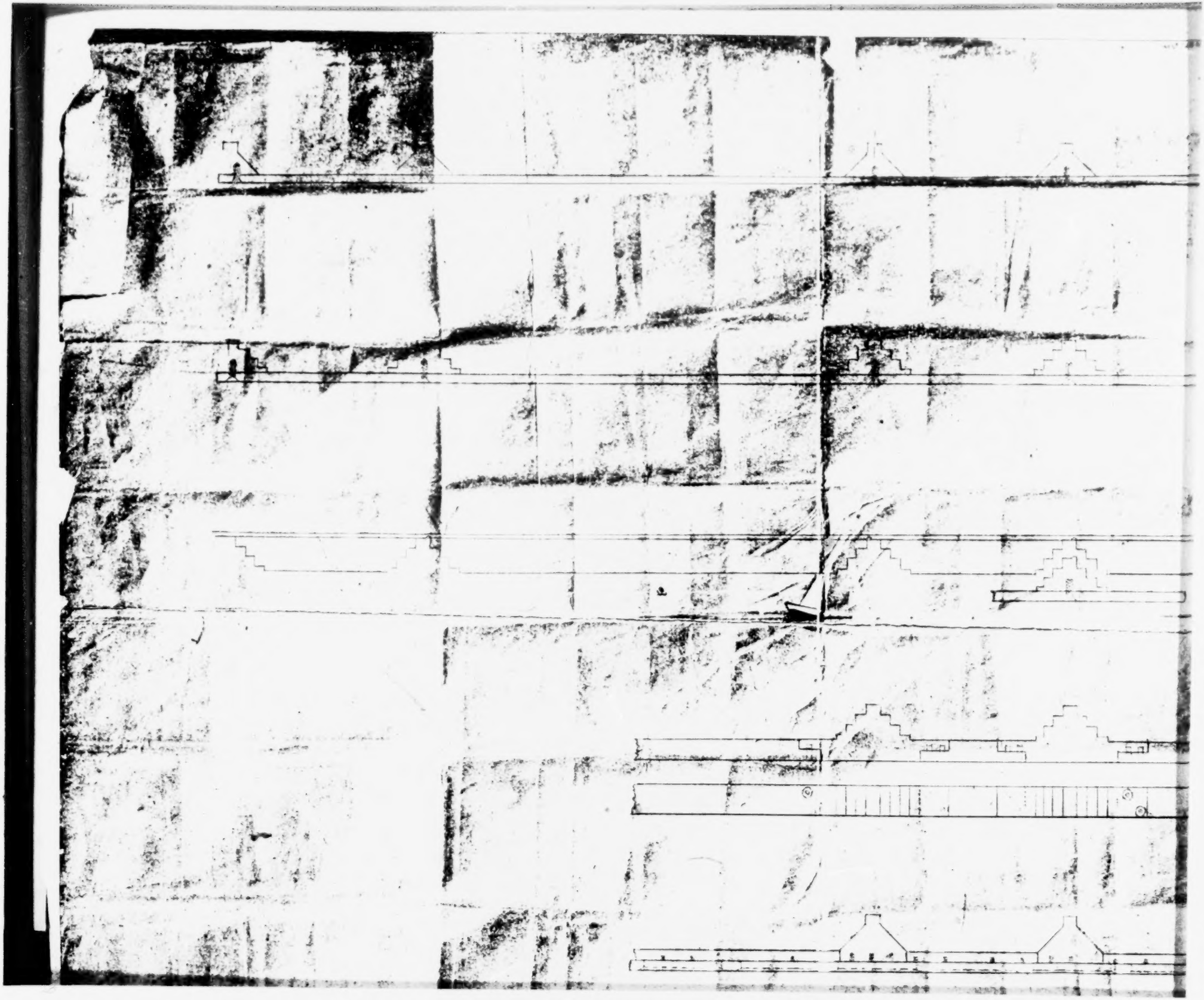
* * * * * * *

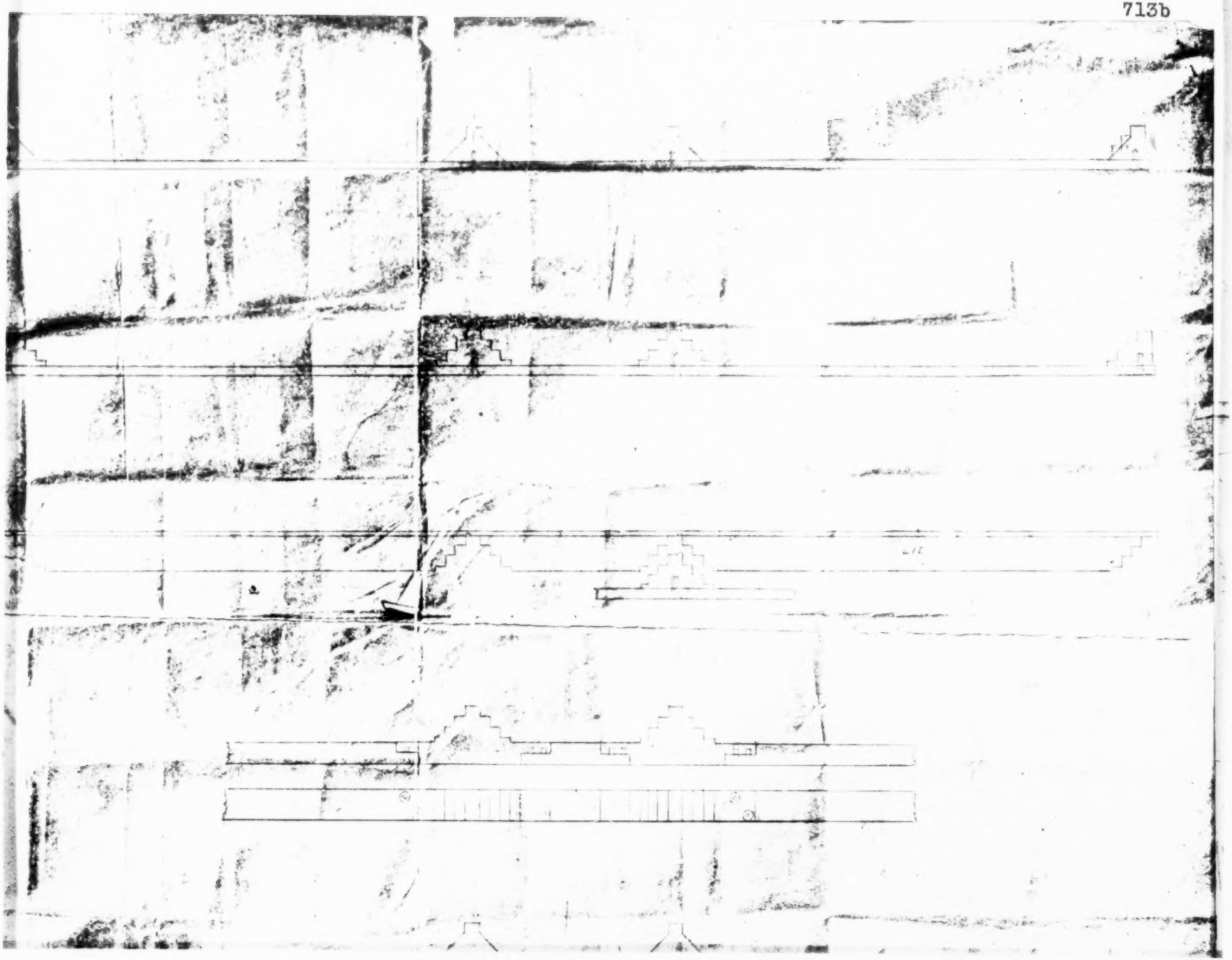
847 I made one or two trips to points in Michigan, principally for the purpose of examining wire stapling machinery in various plants, visiting Eau Claire, Michigan, Holland, Michigan, Grand Haven, Michigan, Grand Rapids, Michigan, Muskegon, Michigan, Goshen, Indiana; made two or three trips to Goshen. I examined that machinery for the purpose of getting ideas and observing it work, so that we could utilize it in the machines that we were having made at St. Joe. Mr. Brown came from St. Joe to South Bend at my request to examine the Rosback machine. That examination was made for the purpose of determining whether he could adapt his staple-driving and forming mechanism to work on the Ros-
848 back machine. Mr. Brown's first visit was to determine in a general way whether this could be done, and his second visit, when he brought his foreman, Mr. Ecklund with him, was for the purpose of taking measurements of the machine so that he could make the parts nec-

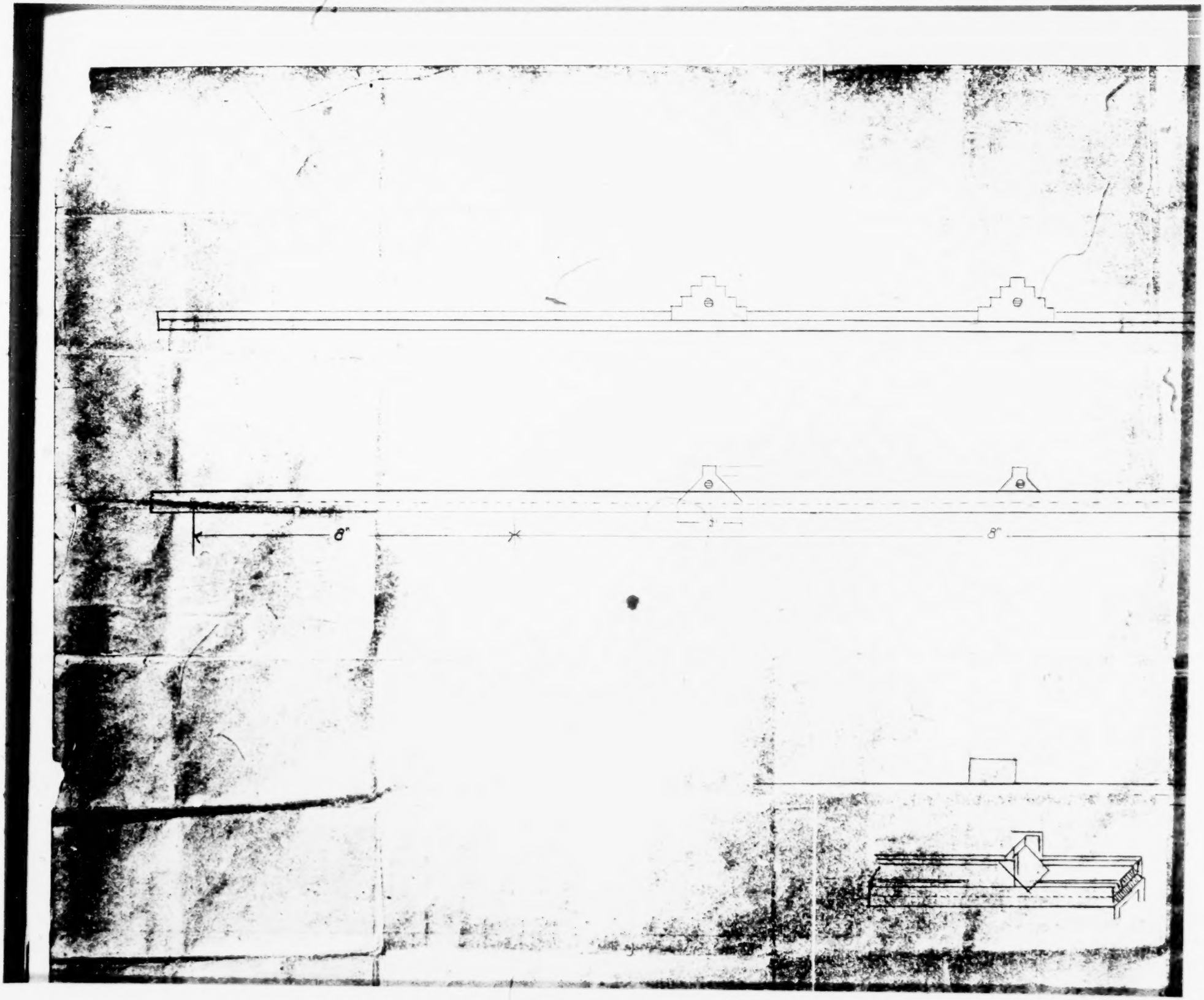


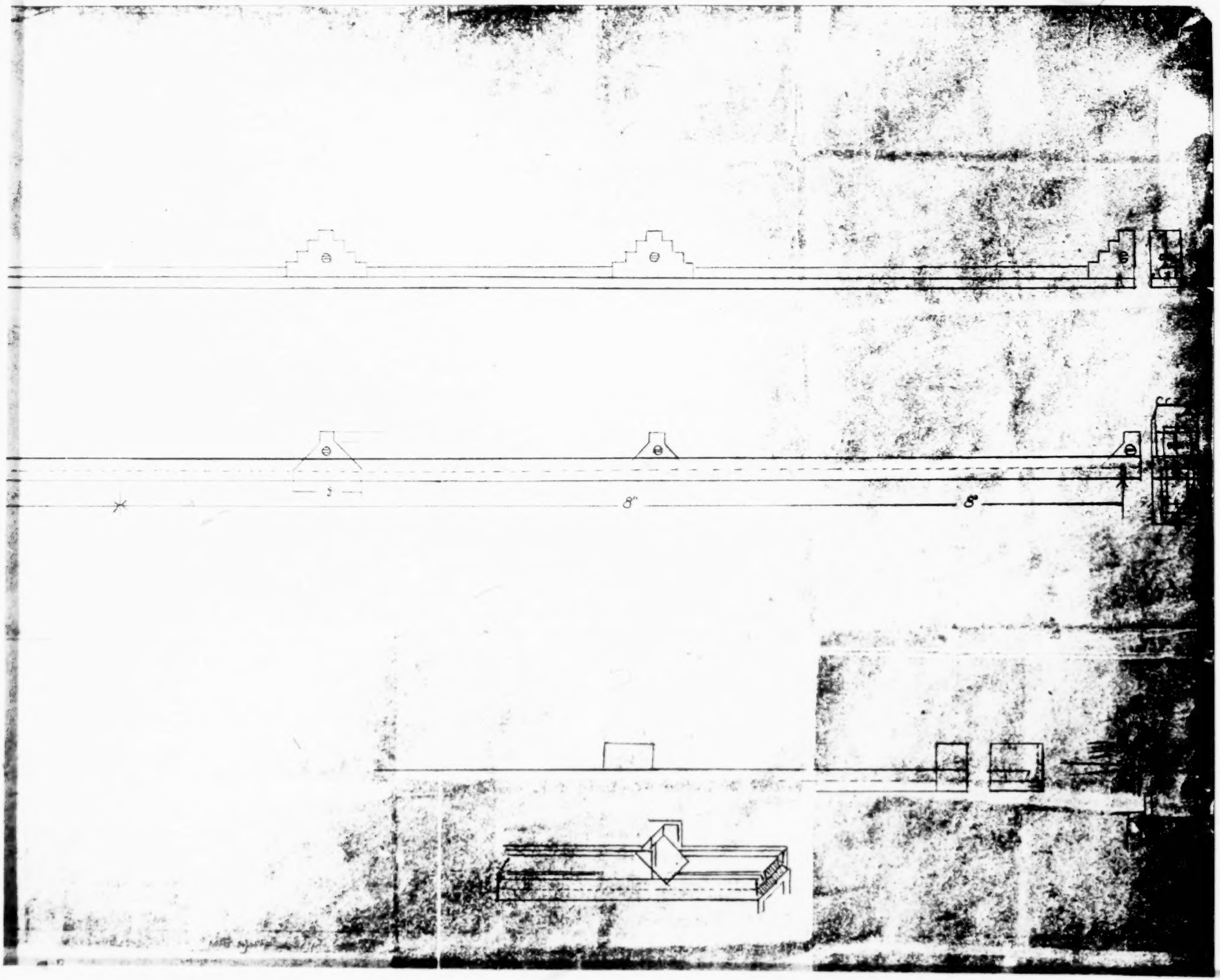
Plan of former survey about May 6th 1904
Furnished to W. P. Healy - May 12th 1904
Furnished to Bureau of Ir. Work about May 25- 1904
Purchase named of Co Ir Sun Works May 27 1904.
Last made to show written survey as per drawing 7 - June 14th
This drawing made June 14th 1904
attest June 15th 1904
Joseph A. Wernicke
Notary Public
My Com. expires Jan. 2-1907

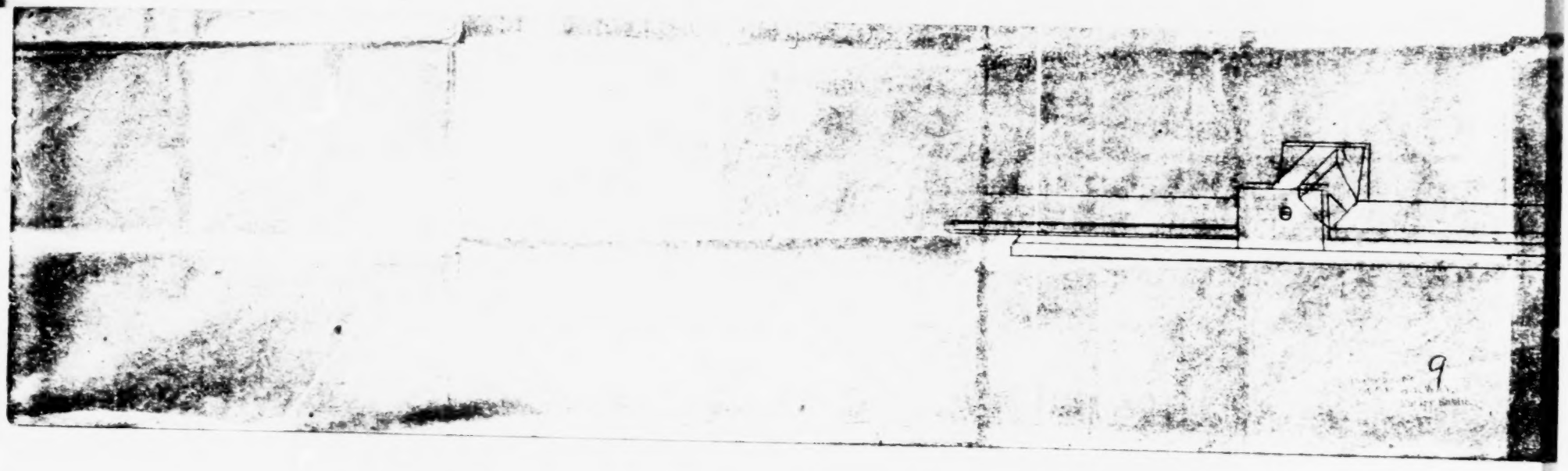
Deft's Ex No 8
W. H. HOLWAY,
Notary Public

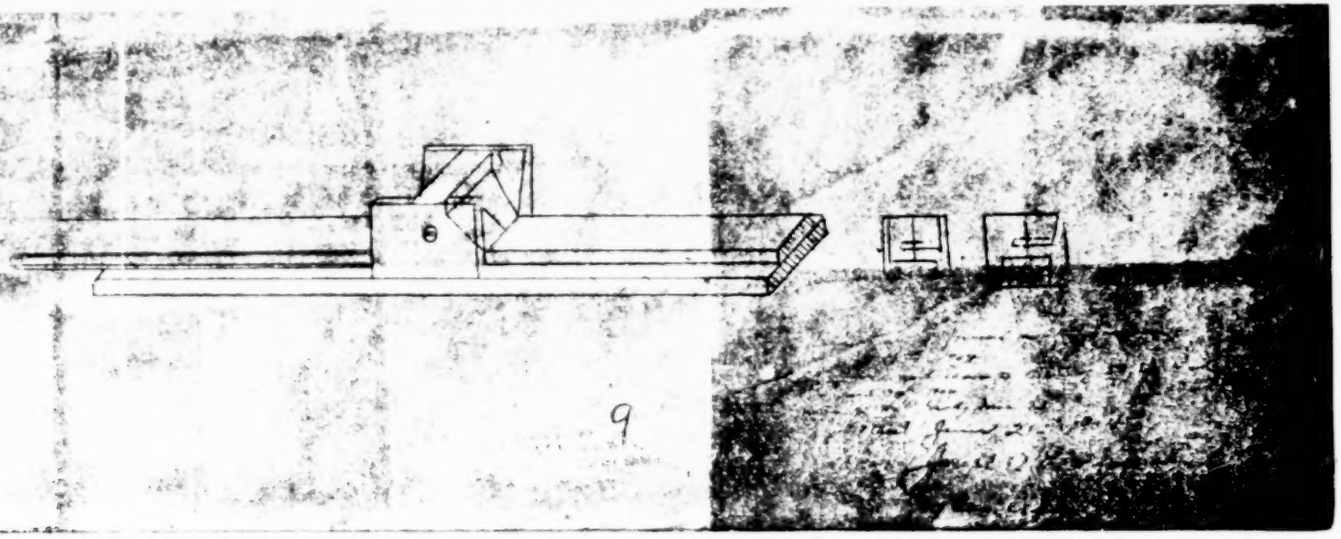




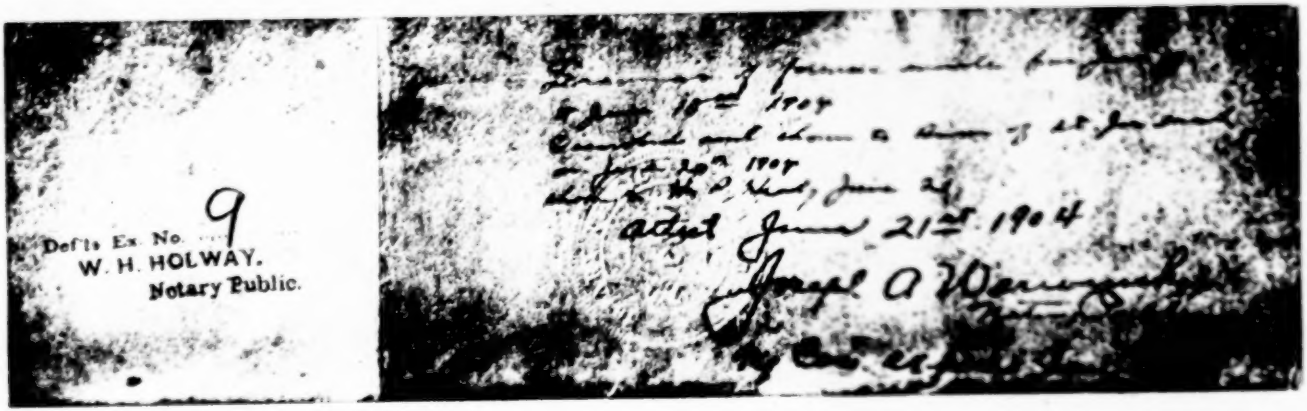

8"
8"


8"
8"


B



9


Deft's Ex. No. 9
W. H. HOLWAY.
Notary Public.
adjd June 21st 1904

essary in his factory in St. Joe to enable him to put his staplers on the Rosback machine.

* * * * * * *

852 The box-blank machine which was built by the St. Joe Iron Works was received in South Bend in September, the early part of September, 1904. It was set up in the plant of the South Bend Healy Box Company and commenced manufacturing boxes for Mr. Russ, I believe. It is still in the plant of the South Bend Healy Box Company making boxes every day.

Q. Now, I will ask you to state what was done by you with reference to designing and having built a step-miter machine?

A. We first commenced to plan and design a step-miter machine after Mr. Rosback left, which was about the 7th, 8th or 9th of June, 1904, and drawings were made of the machine. The plan was discussed daily between Mr. Lavenberg and myself, and about the middle of June we commenced a step-miter machine. This machine was not completed until the early part of July, I think about the 2nd or 3rd of July we made the first cleat on the step-miter machine.

[fol. 715] Mr. Lavenberg built the step-miter machine. Some of the machine work was done by a firm of machinists in South Bend, Maurer, Labbadie & Co. and the saws were made by E. . Atkins & Co., of Indianapolis.

853 The rest of the machine was made by Mr. Lavenberg. We made plans for that step-miter machine, and I made drawings which were attested. I have those drawings, and hand them to the reporter to be marked "Defendant's Exhibit 12."

867 South Bend, Ind., July 29, 1904.

Sandage Steel Skein Company, South Bend.

DEAR SIRS: I desire to purchase a box blank machine for manufacturing wire bound box blanks of any size from twelve inches to thirty-five inches wide and from twenty inches to eighty inches long. Such blanks may consist of one or more boards from one-twelfth to one-quarter of an inch thick fastened by staples to cleats seven-eighth of an inch in depth and three-quarters of an inch in width. The

cleats are step-mitered, four on each side of the blank and placed in formers that are adjustable to the width and depth of the box.

* * * * * * *

868 To describe the difference in the mechanical construction between the Rosback box-blank machine and the box-blank machine which was made by the St. Joseph Iron Works, and which is now in operation, in the Rosback box-blank machine the material of which the blank was made was fed in from the rear end of the machine by the operator, and only one operator could work at a time or feed the machine. The cleats were fed in in one piece the length of the circumference of the box. For example, if they were making a box two feet wide, two feet deep, and three feet long, the cleats would have to be a little over eight feet in length, one piece of lumber and sound throughout the whole piece. These cleats were laid in channels extending from the rear of the machine up to the staple-driving mechanism. One of these channels was stationary at one side of the machine, and the other channel was adjustable to boxes of varying length. In the example of the box just given the second channel guide would be about three feet from the stationary one. One of these eight foot pieces of cleats would be laid in each one of these channels, and the veneer would be laid crosswise on top of the cleat. [fol. 716] Then the operator would pull a rope which run up and to the front part of the machine, which would engage a shaft with sprocket-wheels on it, and a sprocket-chain which also went over sprockets at the rear of the machine, making an endless chain on each side of the machine. Connecting these endless chains was a flat steel bar which when the chains are put in motion would come up and butt against the end of the cleat, and the edge of the last sheet of veneer and by a rather rapid motion push the cleats and veneer up to the stitcher-heads, disengage itself and stop. By pulling a lever on the other side at the rear of the machine the sprocket chain and pusher were operated by another and slower movement, which conveyed the stock under the stitcher-heads where a binding wire was laid along the work over the cleats and staples formed and driven astraddle the binding wire and through the cleats.

The movement of the work in the Rosback machine was continuous, and the staple drivers were suspended on bars over a shaft swung with a pendulum movement, which was equal in speed in a forward direction to the forward movement of the stock, As soon as the staple was driven the pendulum apparatus released itself from the stock, swung backwards, reengaged with the stock and moved forward again at the same rate of speed while the staple was driven and so on. The finished product of the machine in the box of the example cited would be a blank a trifle over eight feet long and three feet wide, with cleats of veneer on the under side extending the full length of the blank, and with binding wire stapled to the veneer and cleats.

In the machine designed by Mr. Lavenberg and myself called the St. Joe machine the staple drivers and formers were mounted on bars which moved up and down only, and the workholder was used to pass the stock through the machine. These workholders were independent of the machine and were filled on the table at the side of the machine. The cleats were step-mitered on the step-miter machine I have described before, so that in the example cited each former would hold eight cleats each two feet in length and step-mitered. The workholder consisted of two sections of channel iron which in this instance would be a little over eight feet in length and in the channel iron were small pyramid shaped boxes fastened to separate these pieces of step-mitered cleats, and keep them at the right distance one from the other, so that the resultant blank would form a lapped cornered box. There was also a spring on the side of the channel iron to hold the cleats in position. The operator placed the cleats in these little [fol. 717] pockets, which exactly fitted the cleat, and which held it exactly in the position in which it was placed, and then the sheets of veneer were laid across the cleats, and a bar or gate was sprung over on the blank to hold it in place. There were three or more of these formers used in the operation of the machine, and they were being filled by several operators, while the machine was doing this work. This former was conveyed through the machine with an intermittent motion so arranged that when the movement of the workholder was stopped, and the blank was stationary the staple would be driven, and as soon as the staple driver was

lifted from the work the intermittent motion would be taken up again and the work would thus pass through the machine step by step. The resultant product of the St. Joseph machine was a blank consisting of four sections or segments, or rather four blanks joined together by a binding wire and al- ready to fold into sides, tops and bottoms of a completed box. The blank as it came from the Rosback machine had to pass through the step-miter machine before it was in condition to fold for nailing in the ends.

871 Q. What difference was there between the two machines in respect to separation of the different parts of the veneer which formed the box? That is, I mean to ask you whether or not there was anything in the St. Joe machine in this piece of steel or iron, which while it was being stapled held the different parts of the veneer apart so that when it was folded it would fold with a lapped corner?

A. Yes, sir, there is a distinction that I overlooked in my first description also. In the Rosback machine the sheets of veneer had to be fed into the machine so that a division between one sheet and the next would not fold where the corner of the box would be when folded, as the veneer in the Rosback machine was scored with a knife in order to make the fold of the box, and the division between the two sheets could not occur within two or three inches of where a corner would come.

In the St. Joe machine the edges of the sheets of veneer would have to fold where the corner of the box would come in order to form the lap with square edges. We used in the former thin strips of metal which were attached to the spacing blocks I have described to separate the cleats, and these thin strips kept the sections of veneer separated from each other, and at the proper distance to correctly form the lapped corner and serve also to hold them in place.

* * * * * * *

[fol. 718] Cross-examination.

883 By Mr. Simms:

* * * * * * *

908 Mr. Robinson took the initiatory steps in the organization of the South Bend Healy Box Company.

I assisted him, and also Mr. Lavenberg, I believe, I don't know. I did not go to the citizens of South Bend and ask them to subscribe to the stock of the new company. Mr. Lavenberg, Mr. Robinson and myself subscribed for the stock of the company. At first we were the sole stockholders. We were the organizers and incorporators of the company which was to receive a license to make wire-bound boxes. We owned all the stock; we three men constituted its Board of Directors. We became the prudential managers of its business affairs. Mr. Robinson became president and I became its treasurer. Mr. Lavenberg was
909 secretary.

Q. That organization was made by you three gentlemen working together at a time when an option was existing or had been promised, if it was not in existence, from Mr. Healy to Mr. Inwood and to Mr. Robinson; is not that right?

A. The option to Mr. Robinson and myself was executed March 31st, and dated back to March 21st, and the Healy Box Company was incorporated April 25th.

923 Q. Now, after the contract was made upon the 31st day of March, you had the Rosback machines, or Mr. Healy had the Rosback machines shipped down to South Bend.

A. Yes, sir.

Q. Who was to pay the freight.

A. We were to pay the freight.

924 Q. How soon did you get them down here?

A. To the best of my recollection they arrived about the first of April, I should think.

Q. About the first of April?

A. Yes, sir.

926 Mr. Rosback came over there after the machines came, and tried to make them run. He had difficulty with them, and I learned while he was trying to operate it, and after he left, that it was faulty in its construction. I was about there quite a good deal when he was making his experiments trying to get it to make boxes, and was interested and looking after the matter. I discovered mostly after he left, that many of its parts were too delicately made, and also discovered that it had been imperfectly builded or constructed. I understood that that machine was

covered by the Rosback patent, and having found these de-
[fol. 719] fects I was casting about to remedy them myself the best I could. We were not successful in making these old Rosback machines work, and were fully decided
927 on that subject, perhaps a week or two after Rosback left, which was about the middle of June. I think Mr. Rosback was there until the 7th to the 10th of June, somewhere along there he left—the 8th of June, I think, but I am not sure. I had been watching him experimenting with the machines off and on all the time he was there since the first of May. I had seen him for a month and eight days working from day to day trying to make the Rosback machines work, and I had seen him fail time after time repeatedly. I was gradually becoming convinced that the Rosback machine would not make commercial boxes. I cannot say whether that began to dawn on Mr. Robinson. I told Mr. Robinson that the Rosback machine was a failure, but he may not have believed me. I told him the results of the efforts that were being made to make them run, and communicated these facts to him right along, as efforts were being made by Mr. Rosback to make them work. Finally, we had to quit it entirely, which we did.

928 Q. It was finally abandoned along about a week after he left?

A. No, sir, it was not abandoned then, we tried still to make that machine work after he left the company. We had the new machine, but we were still trying to make them work, and were trying to make it work when we had promoters in there to look at it. We had known since May that the probabilities were very strong that we could not make it work. He commenced in May, and I saw his repeated efforts and failures from the month of May.

* * * * * * *

938 The South Bend Healy Box Company did not completely make any boxes with the Rosback machines that were set up by Mr. Rosback.

Q. Did those machines make any box blanks?

A. Yes, sir, a number of box blanks were made, but they were patched up or tinkered with by hand.

No sample boxes were made by the smaller set of machines to show to the trade. I don't think those machines

were exhibited to anybody who came looking for sub-contracts of promotion or looking at them for any other purpose. I experimented with them at one time for a day or a day and a half, I think. Outside of that they were boxed up or covered up by a cloth. I don't think they were shown [fol. 720] to anyone.

* * * * * * *

947 Q. While this promotion was being carried forward by Mr. Ladley, what were you doing over in South Bend in the plant of the South Bend Healy Box Company towards manufacturing boxes?

A. We were trying to make boxes on the Rosback machines, making part on the Rosback and finishing them up by hand.

Q. What were you doing with these boxes that you were thus making?

A. We picked out a few of the boxes which were fit to sell, and sold them to the Russ Manufacturing Company.

Q. Do you know about how much you sold during that period from June 1st to September approximately?

A. I should say about eight hundred, as near as I can remember.

947 Q. It is a fact, is it not, that during that summer while you were waiting for the building of the Flora machines, you used your South Bend Healy Box Company building as a place to operate your promotion work from?

A. We used the plant as an exhibition plant when people would come up there to show them.

Q. Whenever you had any opportunity to promote any territory outside, if you could, you brought the persons interested through either your correspondence or Mr. Robinson's efforts, or Mr. Ladley's efforts, you brought those people to South Bend to exhibit the enterprise at the plant, didn't you?

A. Yes, sir.

Q. So that it is a fact that this was the base of your operations, the plant of the South Bend Healy Box Company? I mean your promotion in the nine cities.

A. It was the only plant we had to show, if that is what you mean. It was our exhibition plant, yes.

Q. About the only purpose that that plant subserved un-

til you got your Flora machines was exhibition purposes, was it not?

A. Well, it didn't serve that purpose very well.

Q. Well, that's about the only purpose it did serve?

A. We tried to make boxes right along, worked right along in the hope that we would in a few days be able to supply boxes. We took orders for boxes, had orders on hand and tried to make the boxes.

* * * * * * *

951 Q. Now, is it not a fact that during the experiments that had been theretofore made that Mr. Healy [fol. 721] and yourself and Mr. Lavenberg had been in very frequent consultation as to the defects of the Rosback machine and weren't you all casting about to overcome these defects in the building of the machines in order to produce a machine that would successfully make commercial boxes, and had you not all been engaged generally during the preceding summer in trying to bring that about?

A. Mr. Healy had those points overcome, or claimed he had in the machine which at that date was ordered of the Dodge Manufacturing Company. Mr. Lavenberg and myself did make experiments and study of other types of machines, which would accomplish the same result, and we were also trying as you suggest to make the Rosback machines work.

958 "South Bend, Ind., July 29, 1904.

Mr. W. P. Healy, South Bend, Indiana.

Dear Sir: Your order for Box Blank Machines is received by us, and accepted on the conditions that we are able to make satisfactory arrangements with the St. Joseph Iron Works for the purchasing of their Staple driver and former, or that we may be able to find some other make of Staple driver and former which we know to be good, and which can be adapted to the machine in question.

It is our understanding also, from the conversation with Mr. Inwood that we are at liberty in this machine, to use the patterns for the Brown machine or to copy it or any portion of the machine now in use by the South Bend Healy Box Company.

We are already taking steps toward the construction of this machine and assure you that its manufacture will take precedence over any other work that we may have on hand.

It is understood however, that the delivery and setting up of the machine be either in our plant or that of the South Bend Healy Box Company.

Very respectfully, Sandage Steel Skein Co., William Inwood, Treasurer."

Q. Since refreshing your recollection by looking at the letter written by your brother on behalf of the Sandage Steel Skein Company, you are now constrained to
959 say that the order of July 29th, made by Mr. Healy for the building of the machine by the latter company was accepted?

[fol. 722] A. Yes, sir.

Q. And steps taken, according to what your brother says towards building the machine,—in point of fact the machine was never built.

A. In regard to taking steps, I notice the letter is dated the same day as Mr. Healy's letter. There could not be many steps taken.

Q. But that is what your brother says in that letter.

A. Yes, the letter says so.

Q. What do you say now as to whether you carried the order to the Sandage Steel Skein Company and brought a letter back to Mr. Healy?

A. I don't remember as to that. I think possibly I did. I do not know that I did, I do not know that I did not.

Q. What is your best impression about it?

A. I think very probably I carried the letter and document from Mr. Healy to them.

Q. It is a fact, is it not, Mr. Inwood, that for some time you had been trying to influence Mr. Healy to place that order with that company that your brother represented?

A. Yes, sir; I commenced about the 6th of July; I wrote Mr. Healy asking permission to place the plans, which were at the Dodge Company with the Sandage Company.

Q. You had been talking that over very frequently, and you had been authorized by him to do that very thing?

A. I was authorized by him to place the order in Sep-

tember. I don't remember when the order for the box blank——

Q. Don't you have a recollection after reading those letters that an order was placed with your brother for the building of the box blank machine?

A. It is very probable, although I don't remember it.

Q. And in all probabilities it was in view of verbal orders that had been given that your brother was able to say that he had taken steps to build the machine prior to the time when the written order came in?

A. If the order for step miter was given first that would be the case, but I don't remember about it.

Q. I will ask you if you remember of having a conversation with Mr. Healy in which you were urging him to make or place an order with the Sandage Steel Skein Company, in which you said that inasmuch as the St. Joe shops
960 were small you would like to have someone else build the machines; did you use that argument?

[fol. 723] A. I don't remember using that particular argument. I did try to induce Mr. Healy to give the Sandage people some work.

Q. You tried to get him to give the work of building the box blank machines to them, didn't you?

A. That is very probable.

Q. You say that is very probable; don't you know that is so?

A. I don't remember definitely just now; no, sir.

Q. Do you recollect calling his attention to the fact that the Sandage Steel Skein Company had a foundry and could make castings as well as any other company except when it came to fine work in which event they could call upon St. Joe or some other plant to make them?

A. Yes, I think I remember making that statement.

They were engaged in building the Brown machine, the box blank machine, from about May 30th to August 27th. I don't remember requesting Mr. Healy to hurry up the building of that Brown machine at all. Mr. Healy stated on one occasion that he was going up there, and was going to stir them up and give them fits or words to that effect. He said he was going up there, and I cautioned him against angering Mr. Brown, and delaying the machine in that way. In other words, I said I thought it would be a good idea to

hurry the progress of the machine if he could, as he had leisure and was going up to watch its progress anyway.

Q. Do you remember writing this kind of a letter to Mr. Healy on this subject: "We are very much disappointed in not receiving word that the machines are ready to test, and it is of the utmost importance to us to have this test made as soon as possible, and get them down here"?

A. Yes, sir.

Q. "I know very well that you are doing all that you can to help us in this matter, but perhaps it would be well to impress on the firm in the strongest possible way
961 the importance in quickly finishing the box blank machine." Do you remember asking Mr. Healy to do that?

A. I wrote him something like that in substance.

Q. "Lavenberg and myself are both holding ourselves in readiness to come to St. Joe on the first train on receipt of wire from either yourself or the Iron Works."

A. What is the date of the letter?

Q. That letter is dated 8 28 04.

A. At that date, a day had been set for testing the machines two or three times by Brown by saying that it [fol. 724] would be done in a week or so, and this had been done several times.

Q. When had that machine been ordered?

A. That machine was ordered verbally as I remember it now, about the 24th or 25th of May. A check was sent on the 27th of May.

977 Q. Was not whatever improvements that were made upon the Brown machine by you and Mr. Lavenberg made at a time when you were trying to perfect a machine that would turn out commercial boxes, and made for the purpose of perfecting the wirebound box enterprise and industry, and at a time when you were under a contract with Mr. Healy to promote this enterprise and industry in nine large cities of the United States?

A. No, the purpose primarily for seeking to find a machine which would make boxes was that we had gone to a great deal of expense in bringing over a worthless set of machines, which had been represented to us as commercial, and for the reason that it looked at that time if we could not get a machine which would work that the money we had

put into the business would be lost. The primary purpose in looking for this machine was to get out of a bad hole.

. . . . . .

Q. Was the so-called invention of the Brown machine by you and Mr. Lavenberg made in connection with and in furtherance of the effort to perfect the art, enterprise and industry of the box business?

A. I do not think we had any ideas at the time we invented the machine of perfecting any art especially, but to get a machine that we could make boxes with and fill our orders, for the South Bend Healy Box Company, I mean.

. . . . . .

980 I think the Rosback machines were set up so that Rosback was trying to make boxes on them sometime within the first week of May. He first installed the large machine. The small set of machines were really not installed at all. The efforts to make boxes up to the time the Brown machine was shipped down there, were all made practically on the big Rosback machine. We did try to use the small set, but they were broken, and then we laid them aside and never tried to use them afterwards. The machines were turned over from me and Mr. Robinson to the plant of the South Bend Healy Box Company June first. The company was organized the 25th of April, and we got [fol. 725] quarters to go to work in some time in April.

During the month of May, Mr. Lavenberg's principal work was installing the line shafting, countershafting, building saw-tables for rip-saws and cutoff saws, installing the gasoline engine and tanks and occasionally assisting Mr. Rosback. That continued throughout the month of May, and I should say until Mr. Rosback left about the 7th or 8th I guess it was, of June, along there. Mr. Lavenberg really had charge of the installation of the shafting and gasoline engine and making the saw-tables and the fixtures that would be used in the manufacture of the boxes. I would not class him exactly as a carpenter but he is an experienced wood working man. We had parties employed there to assist Mr. Rosback, and he used them a part of the time when needed. We had only two men in our employ assisting Mr. Lavenberg. They were employed to

982 assist Mr. Rosback, but there was a large part of the time that there was nothing for them to do, and they worked partly for Mr. Rosback and partly for Mr. Lavenberg. I did a little work in getting this shafting, line shafting saw-tables and things arranged to get the work started, but not of much consequence. To get the plant on its feet during the month of May, I lent assistance by attending to all the errands that were necessary in the way of procuring machine parts for either Mr. Rosback or Mr. Lavenberg, and I went out and solicited orders for boxes, or at least presented my box to the people in South Bend, who used boxes, working up the business from that end of the line and while I was in the shop, sometimes I would take hold—I helped Mr. Lavenberg out where I could.

Q. Did you succeed in getting any orders of any magnitude for boxes in the month of May?

A. No, sir, not of any magnitude. I had several people who would give me orders to try the boxes.

I should say I worked at that rather energetically during the month of May. I devoted all my time in one occupation or the other almost, either helping Mr. Lavenberg with the saw tables or taking orders or running errands, and that lasted up until Rosback went away.

Q. And then when Rosback went away on the 8th of June, you began to pay some attention to the Rosback machine itself, in trying to make it do what Rosback failed to make it do?

A. I devoted some attention to it, and Mr. Lavenberg took charge of that, and as before I assisted him, and was in the plant more than before he left.

[fol. 726] Q. Lavenberg did not take charge of the machine as long as Rosback was trying to fix it up?

983 A. No, sir, he did not.

A. Yes, sir.

Q. On the 8th of June?

A. Yes, sir.

Q. And then you came in and rendered such assistance as you could in trying to make the Rosback machine work?

A. Yes, sir.

Mr. Norman E. Brown of St. Joe was down to see the Rosback machines twice. He first came down in May before Mr. Rosback left, and I think the second time was im-

mediately or shortly after he left. Before Rosback left, Norman E. Brown was there between the 25th and the last of May—I cannot say positively what date. He came down at my request to see if he could place his staple driving and forming mechanism on the Rosback machine, to tinker it up so that it would go. He looked the machines over while he was there. He said he was not positive whether it could be done, but he thought it could be done. He went away and was gone some time, until the 8th of June, when I asked him to return again. I don't remember the date that he came back. I have nothing to connect that date. Up to that time we were indulging the hope that Mr. Brown would be able to put his staple driving and forming mechanism on the Rosback machine as he rather thought it could be done, in case Mr. Rosback could not make his work.

984 At the time of his second visit we were quite a bit in doubt whether we could make the machine work with the Rosback stitcher and that is the reason we had Mr. Brown come down to take measurements to put his stitcher on. Up to that time we indulged the hope that if he failed to make the Rosback machine work he could use his former and thus make it work. We indulged that hope up until October, September or October.

Q. Still thought that. Now, in view of what you have said, would you be kind enough to state whether you and Mr. Lavenberg had made the invention that you claim respecting the Brown machine prior to May 25th?

A. Yes, sir, I claim the invention of the Brown machine was first made May 12th.

Q. Didn't it strike you as being a singular fact that you were asking Mr. Brown to come down to see if he could put on a stapler of his own and attach a former of his own to the Rosback machine, when you had already invented a stapler and former that was much better?

[fol. 727] A. Not at all. It was very questionable in our minds whether our machine would work or not from the fact that Mr. Healy had spent or said he had spent a large sum of money, and had made machine after machine which were discarded, and it seemed hardly to be expected that the first machine that we would design would work, and that it would take six months or more to make that machine anyhow, and may be years to perfect it so that it would

work. In the meantime we were paying rent and were on expense and we wanted a machine that would make boxes.

Q. Weren't you influenced a little by the fact that you had only had a little time to work on it up to May 12th that you perhaps had not had as much time to perfect the box-blank machine as two inexperienced inventors ought to have to make a machine of that kind?

A. We had done practically no work on the Rosback machine up to May 12th—that is, we were watching its operation very carefully.

Mr. Pickens: You don't understand the question.

A. Read the question.

(Question read.)

985 Mr. Pickens: I suppose you have reference to the work on the inventions.

Mr. Simms: Yes.

Q. Of course, you did not put in all your time up to May 12th watching it?

A. No, sir.

Q. Because Mr. Lavenberg was quite busy with another job, and because you, as you have stated, was quite busy with a job of your own, so that you did not have a very large amount of time at your disposal from the time the Rosback machine came and turned out bad until May 12th in which you and Mr. Lavenberg could work on the invention?

A. Mr. Lavenberg's work was always in the same room with Mr. Rosback, which is a small room, and he was constantly familiar with the work or parts that Mr. Rosback was working on. I was in the room every day, and many times a day, most every day, sometimes there during the greater part of the day, doing nothing but watch Mr. Rosback, and running errands for either him or Lavenberg in the room as well as out.

Q. Do you mean to state that you and Mr. Lavenberg together invented this Brown machine by devoting all the time you had at your disposal from the time the Rosback machine was installed up to May 12th, do you, watching Rosback in his experimentations with his machine?

[fol. 728] A. The work of the machine——

Q. Answer the question first.
A. Read the question.

(Question read.)

A. No, most assuredly not. The invention was made on the 12th of May by watching the machines in the plant of H. G. Thayer & Co., and by going over a large number of machines and working them by hand in the plant of the St. Joseph Iron Works. The first invention of the St. Joe machine was the idea of using a machine similar to the crate stapling machine of the St. Joseph Iron Works and combining with that machine some means of moving the work through the machine under the staplers as in the crate machine the work was moved through by hand; and also combining with this machine the staple forming and driving mechanism of either that machine or the Climax basket machine, and of combining also some means of laying the binding wire in the crate stapling machine so that
986 the staples would be driven astraddle of them. The idea was quite different even at that time, the 12th of May from the Rosback machine. In the Rosback machine the work was fed through the machine and it was stapled by a staple driving and forming mechanism mounted on a swinging pendulum movement. In the Climax basket machine at St. Joe the movement of the staple driver was up and down. Its movement was simpler and more accurate, and I thought it would be a fine thing if I could adapt that movement to stapling box-blanks and I devoted the afternoon to studying how I could devise some means of utilizing a staple-driving and forming mechanism similar to the Climax machine in the St. Joe factory to making box-blanks, and the discussion between Mr. Lavenberg and myself resulted finally in the use of a former to do this work.

Q. An adjustable former?

A. Yes, sir, eventually in the adjustable former, first, a non-adjustable. There is no similarity in the mechanical principle or in the work of the machine between the box-blank machine first ordered of the St. Joe Iron Works or the machine as completed, and the Rosback machine, which is in the plant of the South Bend Healy Box Company. The idea is so entirely different that there is nothing in the Rosback machine which would suggest the St. Joe machine.

The afternoon I devoted to the invention of the Brown machine was spent at the St. Joe Iron Works. Mr. Lavenberg was not with me.

[fol. 729] Q. If you invented the Brown machine upon that afternoon in the plant of the St. Joe Iron Works, how does it transpire that Mr. Lavenberg is a joint inventor with you?

A. The ideas which I gained in the plant of the St. Joe Iron Works, and which I explained to Mr. Lavenberg in the presence of Mr. Healy on that evening of that day 987 were not complete enough to constitute the entire invention of the machine, for the reason that while I had the idea of combining the mechanism for moving the work through, I did not at that time have the idea of what the mechanism would be, and how it would do for work in conjunction with the other parts of the machine, and it was that discussion with Mr. Lavenberg that we planned enough of the details to constitute the practical idea of a working machine.

The non-adjustable former originally built on the Brown machine was the basic invention. The adjustable former is merely an improvement of that.

Q. Did you devote any other time, except what you have now detailed in the invention of the Brown machine?

A. Yes, sir, quite a good deal.

Q. So in addition to your visits to these several plants where stapling machines and formers were being used, and in addition to the time you say you spent in working up a trade in South Bend, for the sale of boxes which you hoped to make, and in addition to the time that you spent in assisting Mr. Lavenberg in the installation of line shafts, engines, and making of saw tables, you spent in addition to all that, other time in advising and studying out the invention of the Brown machine, did you?

A. I want to answer in regard to that question first that I did not state in my examination or any other time that I visited factories where formers were in use. I never saw a former or workholder in use, and the non-adjustable former invented by Mr. Lavenberg and myself was the first of its kind that was ever used in connection with stapling machines for the manufacture of wire-bound boxes.

I did not see a former at the St. Joseph machine shops or Iron Works on a crate siding machine. I heard afterwards that there was one there, after this suit was commenced.

988 When Mr. Brown was down there looking at the Rosback machine, I discussed with him improvements that perhaps ought to be made on the Rosback machine to make it work. When Mr. Brown was down there the [fol. 730] second time I had discussions with him about changes or improvements that should be made on the Rosback machine in order to make it work. These discussions did not relate to the alleged inventions that I claim I have made. They might have been mentioned at that interview at some time or other, but not in connection with the Rosback machine, or the work that he was to do on the Rosback machine.

As late as the fall of that year we were indulging the hope that Mr. Brown would be able to make the Rosback machines work successfully. The plan to make it successful as I understood it, was for him to attach his stapling machine and former to that machine, that is, his staple driving and forming head or mechanism. This, of course, necessitated some other changes in the construction of the Rosback machine in order to do that. We expected that to be done up until after the middle of September, perhaps in October; I don't remember. I think it was after. I left the Healy Box Company on the 19th of September. The verbal order for the Brown machine was given back on the 25th day of March.

989 Q. So that whatever inventions you had made were made long prior to the time when Mr. Healy sent you up to St. Joe with the list of patents covering the Brown machine?

A. Yes, I think all of that.

* * * * * * *

1041 In that prospectus we represented to the public that we were making these boxes under patents that we now control and owned. We made some changes in the cuts though.

Q. I call your attention to a letter found on page 5 of the prospectus, and ask you if you recognize that?

A. Yes, sir.
Q. Is that a genuine letter?
A. Yes, sir, that is a genuine letter. I would like to say——

1042 Q. Did the National Wire Bound Box Company ever get this letter reading:

[fol. 731] "The Russ Company, Manufacturing Chemists, South Bend, Ind.

Sept. 22, 1904.

National Wire Bound Box Company, South Bend, Ind.

DEAR SIRS: We are pleased to tell you we have found the wire bound box entirely satisfactory. We find that we can make some saving in the first cost of the box. We can also make a saving in the freight as the wire bound box weighs exactly half what our other boxes have weighed, and further than that we find that the wire box will stand more abuse and leave contents of box in better condition than any other box we have ever used. We have had experience of nearly twenty years in using packing boxes, and prefer this box to anything we have ever used.

Yours very truly, The Russ Company."

Dict. by C. E. Russ."

Did the National Wire Bound Box Company get that letter in that form?
A. I started to explain that a moment ago.

* * * * * * *

1045 Q. I now call your attention to another letter found on page 5 of the prospectus, which reads:

Sandage Steel Skein Co., Manufacturers of Steel and Cast Skein, South Bend, Ind.

November 4, 1904.

National Wire Bound Box Company, South Bend, Ind.

GENTLEMEN: We were somewhat skeptical about your box being strong enough to answer our purpose, but after using your 20 x 12 x 5½ box for shipping Sad Irons, Shoe-

lasts and Stand, weighing 108 pounds to the box, and giving them excessively rough handling we found them perfectly satisfactory. Also a great saving in time and weight.

Yours very truly, Sandage Steel Skein Company,
per H. H. Longly, Manager.

That letter was received by the National Wire Bound Box Company, and speaks the truth. The Sandage Steel [fol. 732] Skein Company had used a box manufactured by the National Wire Bound Box Company and covered by our patents and furnished by us.

1048 Q. When did you commence to make that lapped box?

A. In July, probably about the tenth.

Q. You commenced about the 7th according to your own letters, didn't you?

A. It may be that we made a few boxes in experimenting on the seventh.

* * * * * * *

1049 Q. On page 7 of the prospectus I call your attention to another letter, which reads:

C. A. Schrader, Wholesale Grocer, Indianapolis, Ind.

November 9, 1904.

National Wire Bound Box Company, South Bend, Ind.

GENTLEMEN: We are very much pleased with your wire bound box. We find that it will carry double the weight of any other box, and can be handled much easier, due to the positive hand holts at each end.

Yours very truly, C. A. Schrader.

You knew when that letter was written, it referred to the box made by the South Bend Healy Box Company and not by the National Wire Bound Box Company, didn't you?

A. It referred to the box owned by the National Wire Bound Box Company, and controlled by it.

* * * * * * *

1053 Q. At the time you were in Chicago consulting with Mr. Uhri and Mr. Knudtson, prior to the time that Mr. Robinson had made his alleged purchase of the

patents, did you then know that the machine built under the Knudtson and Uhri patents were the pioneer machines for the manufacture of wirebound boxes?

A. I knew they were not.

I did not learn that from Mr. Dyrenforth, our patent attorney. Prior to the time the Knudtson and Uhri machines were built, or machines built under these patents, the making of wirebound boxes was done by a hand machine constructed by Howenstine. It was a tool, which as [fol. 733] I understand it, took the wire from a reel, formed it into a staple, and drove the staple. I did not know from Mr. Stephens that a test had been made of that tool, and that that test had resulted in failure, and I don't know as it is a fact.

* * * * * * *

1060 Complainant's Exhibit 135 is a copy of a letter written by W. P. Healy to R. G. Inwood on April 26, 1904.

Letter offered in evidence as "Complainant's Exhibit 135" and reads as follows:

Chicago, April 26, 1904.

R. G. Inwood, Esq., South Bend.

DEAR SIR: Your letter and telegram received. I have employed a carpenter to crate the machines and tomorrow I will try to find a teamster to take them to the depot. We will not need Mr. Rosback's assistance in setting them running. I expect to be able to go to South Bend either Thursday or Friday. I have executed the license to the South Bend Healy Box Co.

Rosback cannot make trouble for anyone connected with my machines. He tried to make me believe while in Paris that he could get up another machine that would not infringe mine, but after hearing his explanation I declined to spend any more money on his inventions, because he has got to the end of his rope; he has exhausted himself and I changed off for Mr. Flora nearly three years ago. He is paid in full for all of his inventions that I am using, and Mr. J. W. Dyrenforth drew the contracts to that effect.

Yours truly, W. P. Healy.

"I left Philadelphia County out of the general license because Mr. Robinson told me that he wants a special option on that place. If he has changed his mind I will put it back in the general license.

W. P. H."

1063 Q. Where is that correspondence?

A. There are two or three telegrams and a letter from Mr. Healy stating that if we would surrender St. Louis we could work in Cincinnati or promote Cincinnati, and with this permission Mr. Robinson went ahead with the promotion.

Mr. Simms: Complainant offers in evidence the paper marked Complainant's Exhibit 137.

[fol. 734] Paper offered in evidence marked "Complainant's Exhibit 137, W. H. Holway, Notary Public," and which is in the words and figures following to-wit:

COMPL'TS' EX. NO. 137. W. H. Holway, Notary Public

"South Bend, Ind., July 7, 1904.

Mr. W. P. Healy, St. Louis, Mo.

DEAR SIR: Replying to yours of the 6th inst.

On Mr. Robinson's return, probably Saturday, we will go up to Dodge's, and if possible cancel the contract and get the blue-prints. We will not place the plans with any one else until after we talk the matter over with you.

I have just telephoned to Mr. Lavenberg who tells me the step-mitre machine is completed, and the former nearly so, and that he expects to be running with them on some boxes tomorrow.

The last report from the Muncie people was that they were coming either Saturday or Monday. I had a letter from them asking for information which has been answered.

The boxes and blanks were not sent to the addresses Mr. Porter gave. I do not now know why, but I have to-day expressed them as directed.

Our step-mitre machine would have been finished much sooner, but promotion exhibitions and the getting out of sample orders of special sized boxes for Louisville and

Cincinnati firms has pretty well occupied Mr. Lavenberg's time.

Yours very truly, R. G. Inwood."

* * * * * * *

Cross-examination continued.

1065 By Mr. Durand:

* * * * * * *

1078 Q. But you say that on the 12th of May, 1904, the invention was first made?

A. We got the first idea for the invention.

Q. That is where you conceived the idea?

A. In a general way, but not enough to constitute the invention. I did not have in mind how the complete machine would work. I had merely an idea of using some parts of the machines which I saw that day, and it was with Mr. Lavenberg's assistance that we planned the manner of using these parts in a practical machine.

[fol. 735] Q. And then you and Mr. Lavenberg considered yourselves joint inventors and submitted to the St. Joseph Iron Works an order for a machine?

A. Yes, sir.

Q. And did you consider yourself a joint inventor with Mr. Lavenberg at that date of the former?

A. No, sir, the former was not invented until later.

Q. When did you claim to have invented it?

A. The former was invented, I should say on the first of June, a non-adjustable former; the adjustable former invention was perhaps completed by the 20th of June.

Q. And it was the joint invention, you claim of yourself and Mr. Lavenberg?

A. Yes, sir.

1080 Q. And the first order which you say you gave the St. Joseph Iron Works was for a machine containing chains something like the Rosback?

A. A little on that order, yes, sir.

Q. In what way did it differ from the Rosback machine?

A. It differed from the Rosback machine, first in that the cleats and veneer were fed into the machine continu-

ously. In the Rosback machine the operator could put in one blank, and could do no work in putting in the second blank until the first blank was partially out of the machine. In this machine the feeding was continuous,—in the Rosback machine the work was carried through the machine with a continuous motion; in this machine the work was carried through the machine with an intermittent motion. In the Rosback machine the staple driving and forming mechanism was hung on bars from a shaft at the top of the machine, and operated with an oscillating movement gripping the work as it went over, and moved with the work while the staple was being driven, and after the driving of the staple this pendulum released the work and swung back over the work while the work still continued with this progressive continuous movement and again gripped the stock and proceeded forward with the work driving the staple and so on. The Rosback machine was not calibrated, and in order to adjust the machine for a new box blank, it was necessary to run a cleat through the machine, see where the staples would fall, make new adjustments, try the experiment again and readjust and so on. The new machine was calibrated so that experiments of this kind were not necessary. The Rosback machine was provided with a skipping mechanism, which, after experiments, could be arranged so that when [fol. 736] the driving mechanism came to where a corner in the box would fall the machine would skip two places or fail to drive a staple at one of the regular places where a staple would otherwise come. In the St. Joe machine the mechanism of the machine was made accurate
1081 enough so that the staples would fall in the right place, and the skipping mechanism was not needed. In the Rosback machine the staple forming and driving mechanism was made adjustable so that you could drive a staple with longer or shorter legs or one leg short and the other long, or you could use a different sized wire, and in the St. Joe machine only one staple of one length and of one size wire could be driven with the staple driving and forming mechanism. To change the length of the staple it was necessary to remove the staple driving and forming mechanism and replace it with another which would make the size of staple desired. The only similarity I should say between the two machines was the fact that

both employed a chain movement, and in this point they were not exactly similar for the general movement in the St. Joe machine differed materially from that of the Rosback, the similarity being only in the fact that both employed the chain movement to take the work through the machine.

1081 In this Brown machine, which was delivered to the South Bend Healy Box Company factory there were no chains. The plan of the machine was altered to use formers after we had invented the former.

Q. In fact the St. Joseph Iron Works never made a machine with chains in it, did it?

A. They had commenced building the machine but had progressed but little in its construction. At that time the chains were altered by Mr. Lavenberg and myself to a machine which would use a former.

1087 Q. But with your invention the box when completed was substantially the same as the old box except that the veneer lapped at the corners, and as you say the staples were driven not quite through the cleats, that is the only difference when the box is fully complete?

A. Oh, no, not at all.

Q. Well, what else was there.

A. Well, the Rosback box when completed was not a commercial box. It was a box we could not sell, for the reason——

Q. I am not asking you for difference in the commer- [fol. 737] cial character of the boxes, but for difference in the construction.

A. Well, the construction of the blank in practice was different for this reason, that in the Healy or Rosback box when folded the corners sometimes, some of the corners on one box would be round at one end and out clear through making a hole at the other end. This could not be regulated on the Rosback machine so that this would not occur, and if the grain of the wood was not exactly parallel to the cut it would make the corners splintered. In our box the corners were perfect.

1088 Q. Well, then, when you first went to Mr. Brown, did you meet him knowing that he was an expert mechanic, an expert in this art of staple machinery for basket making and so forth?

A. I was told so by Thayer & Company, yes, sir, and I had no reason for doubting it.

Q. Do you remember what Mr. Thayer said?

A. He said,—I don't know that it was Mr. Thayer personally, but the person I talked with in charge of the plant.

Q. Who was he, what was his name?

A. I don't remember his name. He was an old man about, I should judge, sixty years old. I was told his name at the time, but I don't remember it.

1089 Q. But he was thoroughly familiar with the machines that he had in use at the Thayer factory?

A. He seemed to be, yes, sir.

Q. And he knew where they came from?

A. Yes, sir.

Q. And was acquainted with Mr. Brown?

A. Yes, sir.

Q. And recommended you to go to Mr. Brown?

A. Yes, sir.

Q. Can you recall about what he said in your discussion with him?

A. He said "The Brown staple forming and driving mechanism, in my opinion, is the best there is. We have been using his staple drivers and formers and they give us very little trouble, and run along about as you see them this morning, continuously."

1090 Q. They told you about Mr. Brown?

A. Of the St. Joseph Iron Works, yes, sir.

Q. And gave you to understand that he was an expert in this line of machinery, and had been in it for a great many years?

A. Yes, sir.

[fol. 738] Q. And probably that you could rely upon anything that he said, or anything that he gave you, and you found that to be the case afterwards?

A. I found that to be the case afterwards, but I don't know that he made that remark. I don't think he did.

* * * * * * *

1090 I am not quite sure who first suggested the lapping of the veneer at the corners of the box, but I think it was one of the people that we tried to sell the box to. Some firm. I think it was, well, I don't know, probably Mr. Russ.

I know he suggested it, but whether he suggested it first I don't remember. It was suggested a great many times. He is of the Russ Company, South Bend, Indiana. The circumstances attending his suggestion of that feature were that he complained of the box. He did not think it was a commercial box with holes in the corners, and around the corners,

1091 and that it would be much better if we could have square corners, and have the edges overlap. I was told that, I think, by a number of people I was trying to sell boxes to. That is one of the reasons why we decided to make a lap box instead of the old style. It was necessary to make a box that we could sell, a commercial box. I think Mr. Russ made these suggestions some time in May, 1904. He made them to me.

Q. About what time in May?

A. Well, Mr. Rosback got to South Bend the first of May, and I went out immediately with some boxes that had been made by Mr. Rosback and shipped over with the machine. I took these boxes and solicited orders, and it was during this soliciting that I met with the objections to the box which we were making or trying to make.

1091 Q. Do you remember, Mr. Inwood, when it was you began making these boxes with lapped corners?

A. I think in July, between the 1st and 15th.

Q. Of 1904?

A. Yes, sir.

Q. Did you make many of them?

A. No, sir, they were sample boxes, experimental boxes.

Q. Simply made to exhibit and show?

A. Yes, sir, and in testing and experimenting to get a perfect box. I do not think we made any to sell until the Brown machine was received.

* * * * * * *

[fol. 739] Q. Did you supply any to Mr. Russ before you got the Brown machine?

1092 A. Mr. Russ bought a large lot of the boxes for about one-half or one-third of the price that we were getting for good boxes of that size.

Those were not lapped boxes; they were made on the Rosback machine and tinkered over by hand and the best ones selected out. I do not think we sold any lapped cornered

boxes before we got the Brown machine. I don't think we supplied any of these lapped cornered boxes to Mr. Russ prior to getting the Brown machine. We may have a few.

Q. Prior to getting the Brown machine did you make any lapped cornered boxes by using the box-blank machine,—that is, did you on the Rosback machine make any blanks which when folded, provided a box with lapped corners?

A. No, sir: I don't think we did.

1097 Q. I ask you was that a fact that your box-blank machine is formed,—the material of which the box-blank is formed is put into a suitable former or frame which has side pieces in which the cleats are clamped?

A. That is a fact.

Q. And also has means for holding the cleats of veneering or backing on top of the cleats?

A. Yes, sir, our former has this means?

1101 Q. It was a photograph of the Brown machine that you exhibited to Mr. Dalton, was it?

A. Of the box-blank machine built by the Brown Company, yes sir.

Q. You do not mean that, the Brown Company?

A. The St. Joseph Iron Works.

* * * * * * *

[fol. 740] (h) Certain parts of the deposition of Perry C. Lavenberg, on defendants-appellants' case, which deposition was commenced on November 16, 1905, and concluded on November 18, 1905, are offered in evidence as follows:

DEPOSITION OF PERRY C. LAVENBERG

1112 PERRY C. LAVENBERG, one of the defendants, called as a witness on behalf of the defendants and cross-complainants, testified:

Direct examination.

By Mr. Pickens:

I am one of the defendants in this case; fifty years of age; and have resided in South Bend, Indiana, since May 3, 1904. Prior to that time I resided in Kendallville, In-

diana, and moved from there to South Bend. I had resided in Kendallville, Indiana, in the neighborhood of about thirty years, and came to South Bend to engage in this wire-bound box business. While I resided at Kendallville for between eighteen and twenty years I was employed by the Flint & Walling Manufacturing Company, manufacturers of wind-mills, and supplies pertaining to water, such as pumps, well machines, cylinders, everything per-
1113 taining to water supply. The first six years that I worked for these people I was setting up their machinery throughout the shop, had charge of the tools and machinery in all departments. After that time I was superintendent of the wood-working department, and other departments throughout the shops. I occupied that position up to the time I moved to South Bend. I resigned that position to take a part in the box business.

Q. During the time you occupied the position of superintendent that you have mentioned, what opportunities did you have for observing and using wood-working machinery?

A. We made the wood part of the wind-mills there; also made tanks of various sizes and shapes. We also built an automatic well machine, horsepowers, and for three years I had charge of a department in the wood-working shop building scalpers, graters, also roller feeds for feeding grains, roller and grist-mills and other machines for milling purposes.

I first became acquainted with Mr. Healy on the 25th day [fol. 741] of March, 1904, and first met him in Mr. Flora's office in Chicago.

* * * * * * *

1116 I think I first met Mr. Rosback just after the third of May. Mr. Rosback came here under a contract for the purpose of setting up the box machinery and running the same. He worked at that, I should judge about six weeks.

* * * * * * *

1117 Mr. Rosback did not succeed in getting his machines to run so as to turn out completed boxes. There were not any completed commercial boxes made on

those machines by Mr. Rosback, while he was in charge of them.

Q. Were there any boxes turned out by those machines, and completed by hand?

A. Yes, sir.

Q. During that time?

A. There were box blanks made and completed by hand. The staples were badly formed and not driven into the cleats, which had to be replaced. In a great many instances the step-miter did bad work. The cleats had to be removed from certain parts of the box, and other
1118 ones put in their place, and in trying to place the ends into the boxes with the nailer, it was not a success as it turned about one-half of the nails down, did not drive them, which caused us a great deal of expense, and we had to place the ends in with a hammer and nails.

* * * * * * *

After about six weeks, Mr. Rosback left in disgust.

Q. What if anything was said by Mr. Healy to you about that time with regard to whether these machines would make commercial boxes?

A. Mr. Healy said that they had always, most always worked very poorly, and also stated that he had been held up by a number of people whom he had employed to build different sets of machines. He said also that Mr. Rosback had held him up. He said that a number of times before.

After Mr. Rosback left South Bend, I went to work in an effort to make these Rosback machines operate. In the first place, I thought Mr. Rosback had not timed his machine properly. The first thing I began to do was to try to adjust it in a manner so that it would in time. I worked at that for three or four days. Finally I got it so that we thought the machine was in perfect time. I am speak-[fol. 742] ing with reference to the box blank machine. I then prepared my work and started the machine. The first break was the sprocket chain holding the bars for
1119 the purpose of conveying the cleats through the machine. After fixing the sprocket chain and starting my machine again I found it was out of time. As quick as we would get one thing fixed there would be something different break about the machine. I found that I had the

same experience in trying to run the machine that Mr. Rosback was up against. My success in turning out boxes with the machine, or box blanks, was even worse than that of Mr. Rosback. We did not make any complete boxes.

Q. Were there any blanks made by the machine while you were running it?

A. Yes, we ran through perhaps four or five hundred blanks, but there was none of them that were perfect blanks. There was a great many of the blanks that were piled up, stored away, from the fact that when Mr. Rosback left the factory, he left the step-miter in bad condition, from the fact that the sprocket chain which conveyed the carriage that carried the box blank over the step-miter heads, was broken, and as we had no links of that number, we were obliged to make the links by hand. After repairing the chain a number of times we gave up the idea of trying to run the step-miter machine. After which time I began to figure, along with Mr. Inwood in trying to make a step-mitered cleat before stitching on to the veneer.

The first time I remember meeting Mr. Brown was along about the 20th of May, I think along there sometime. He came to our shop along about, I don't know, eleven o'clock, I guess, I think it was, in the forenoon. He came there for the purpose of seeing whether or not the Brown stapler could be attached to the Rosback machine. He looked the beams of the Rosback machine over. What I mean by the beams, are the parts that the stapler is attached to. He thought by making a change in one of the beams, and the throw of the eccentric, they could possibly be worked on the Rosback machine, on running the machine by hand, to give him an idea how the stitcher-bar would swing with the motion of the box blank. After this time Mr. Brown left the factory.

1120 He returned in about I should judge, two weeks, with Mr. Ecklund. Mr. Brown did not take the measurements the first time he was there, and he brought Mr. Ecklund with him for the purpose of taking the diameter of the shaft which the eccentrics were placed on and [fol. 743] also the measurements for the length of beam to be used for placing the staplers.

1121 Q. Now what did you and Mr. Inwood do, if anything, with reference to trying to perfect or invent machines that would make boxes?

A. Well, along about the 12th, I think it was—I think it was the 12th of May, in the evening, Mr. Inwood and Mr. Healy came to my house after returning from a trip to St. Joe, and other points in Michigan. Mr. Inwood related to me——

Mr. Simms: No.

Mr. Pickens:

Q. Was Mr. Healy present?

A. Mr. Healy was present, yes, sir. Related to me that he had found a stitcher, which he thought by a certain process that he described to me in the presence of Mr. Healy, that we could figure out a machine that would make box blanks perfectly, and would have a perfect staple forming and driving device, which would not bother us in the future.

* * * * * * *

1123 Q. When did you commence building a step-miter machine?

A. I think along about the fifteenth, along there, of June, 1904, as near as I can remember.

Q. When was that machine completed?

A. I think perhaps it was completed along in August. I am not real certain about that. I know we were delayed in getting our stock cut. We had to get our work done at different shops and our saws were slow about coming.

* * * * * * *

1126 Q. When, if at all, did you yourself, or together with Mr. Inwood, take up the matter of preparing plans for a box-blank machine?

A. It was on the night of the 12th of May, 1904, in front of my home.

Q. State what was done at that time with reference to planning for a box-blank machine.

A. Mr. Inwood, along with Mr. Healy, came to my house. We stood out in front of the gate. Mr. Inwood described a stitcher, giving his idea of how we could best arrange a

machine, as he thought, for the purpose of making the box-blanks. After discussing this question for some time, he and Mr. Healy left together.

The next day, and for a number of days after that we discussed the box-blank machine quite often, and made different sketches for the purpose of making and assembling a machine that we thought would work.

[fol. 744] Our first idea was that we would use the endless chain with long cleats. After this time, in discussing the matter, we thought that we could best use a former, and made drawings which were presented to Mr. Brown for a non-adjustable former. After talking the matter over, we discovered that it would be best to use an adjustable former which we were successful in making. We saw Mr. Brown and told him that we would use an adjustable former instead of the non-adjustable former, but that he might complete the machine with the non-adjustable former, and we would afterwards change it to the adjustable former. This machine was completed with the non-adjustable former and tested in the plant of the St. Joseph Iron Works before sending to South Bend. I guess that's about all.

I do not think I could give accurately the date when it was sent to South Bend, I think it was along about the first of August. In speaking about the former, I refer
1127 to the workholder for the purpose of assembling the cleats and veneers for the box-blank. In the mechanism of the machine there is a staple driving former also. That was not our invention, though. In planning this box-blank machine, there were certified drawings made of our workholder, also drawings made of the "jumbo"——

Q. I am speaking now this so-called Brown machine. There were drawings made of the workholder in that machine as I understand it?

A. Yes, sir.

The drawings were prepared by Mr. Inwood and attested by a notary public. While Mr. Inwood and I were working on the plans for this box-blank machine, I will explain what we were doing in the way of experimenting at the company's plant with wood formers. After Mr. Inwood and myself had begun to invent a former or workholder, Mr. Inwood was making drawings at his home, while I, at times, when I could best leave my other work, was experi-

menting with a former by which I could use a step-mitered cleat after being assembled in this workholder, and the veneer placed upon the cleat, we could convey the same through the machine in such a manner as to make a complete box-blank. We made quite a number of different designs of divided blocks, also different forms with channel and angle bars for the purpose of holding these cleats.

Q. What did you and Mr. Inwood do with reference to conferring together in regard to your experiments at the plant?

[fol. 745] A. I do not see that I just catch your meaning of the question.

Q. I understood you to say that you were experimenting at the plant as you have just described, and that Mr. Inwood was engaged in making drawings. Now, I ask you, what, if anything, was done by Mr. Inwood and yourself with reference to conferences about the work which you were both doing?

A. We would work out our plans that we had made. After working at these plans we would talk in regard to other plans that we thought might be an improvement over the ones that we had already made.

1128 I conferred with Mr. Inwood and showed him what my experiments were at the plant. When that box-blank machine was completed and brought to South Bend from the St. Joe Iron Works, and set up and put in operation, we were able to make box-blanks. After the machine was brought to South Bend, we changed the former or workholder from a non-adjustable to an adjustable former.

Q. How long were you engaged at that work?

A. I had made a great many of the adjustments prior to the machine being shipped, which I could place on those workholders after the machine was shipped to South Bend; also made a great many after receiving the machine.

After the machine was set up with the adjustable workholders, it worked satisfactorily in making box-blanks, except that we had a little trouble with our staple forming device, from the fact that we had not had experience with the staplers. We had Mr. Howard of the St. Joe Iron Works come to South Bend and operate the stitchers for a number of days, after which time the machine worked perfectly.

When the step-miter machine was completed, and the end stapling machine called the "jumbo," and the box-blank machine called the Brown machine, we had three machines there by which we could complete a box commercially. After getting these machines installed and running, we began to manufacture a complete box, a box that was commercial in all respects. We manufactured a box for the Russ Company, also for the Mishawaka Woolen Company. We also manufactured boxes for a large number of the local companies in South Bend.

* * * * * * *

[fol. 746] 1145 Cross-examination.

By Mr. Simms:

1153 I became intimately acquainted with Mr. Healy. I think he was at my house several times. A rather intimate friendship sprung up between Mr. Healy and me. We always talked together very friendly and in a very friendly way. I tried to use Mr. Healy with the utmost courtesy, and my family and I treated him with extreme great kindness.

Q. And Mr. Healy formed more than an ordinary affection for your son and your children, didn't he?

A. Well, I could not say as to that, as to affection.

Q. Didn't it appear so to you?

A. He was very friendly with them.

Q. And they with him?

A. And they with him, yes, sir.

Q. And he visited at your house rather frequently, didn't he, during the summer of 1904?

A. Well, not so often, he was there a number of times. When he came I made an effort to be hospitable and
1154 friendly. I entertained him, and the members of my family did the same thing. We were upon a very friendly and intimate basis through the summer of 1904.

Q. During that time, as far as you observed, what was the apparent relation between Mr. Healy and Mr. Inwood and Mr. Robinson as to being friendly or otherwise?

A. So far as I know they were always very friendly.

Q. Had numerous friendly consultations about the business in your presence, didn't they?

A. Yes, sir. Mr. Healy was very anxious as well as ourselves to see his machines——

Q. Succeed?

A. Succeed. The plant also.

Q. And when the Rosback machine failed, and it was necessary to go to look up a place to build a machine that you thought would work, sometimes you went, sometimes Mr. Inwood went and usually Mr. Healy went with you to make that investigation, didn't he?

A. It was quite often when going over to St. Joe Mr. Healy was asked to go along.

Q. And he went, didn't he?

A. We tried to treat him with courtesy, and knew he had nothing else to do, and he usually went with us.

Mr. Healy was down here, interested in common with us folks in making the South Bend Healy Box Company a success.

[fol. 747] Q. And so you felt it was no more than right that all of you should go together and you should all be consulted about what was being done, and you did not make any effort to conceal anything from Mr. Healy, I take it?

A. Nothing at all. We had no reason for concealing anything that I know of.

Q. And you were working in common during that summer trying to get the thing on its feet?

A. Yes, sir.

1157 Q. Now, up to the time that Mr. Rosback left, which I think was along about June 6th, you still had not bothered yourself about the patents of Mr. Healy, had you?

A. I had not.

Q. You still were relying upon Mr. Inwood and Mr. Robinson to take care of them?

A. Yes, sir.

Q. And you still saw from day to day that Mr. Healy was interested in common there with you, and you were discussing the business with him and all of you making efforts to get it on its feet?

A. Yes, sir.

Q. And doing everything you could find to do to make the machines work?

A. Yes, sir.

* * * * * * *

1158 Q. Well, as you went along waiting for the Dodge machines you tried to see what you could do with the Rosback machine, didn't you?

A. Yes, sir.

Q. And you made such improvements as occurred to you, or tried to; I believe you said you made a greater failure of it than he did?

A. I do not remember of saying that I made any improvements, if I did I was in error. I simply tried to time the machine, and made such repairs as were necessary to run the machine.

1159 I had failed the same as when Mr. Rosback was trying to do so. There was no way I could find to make that machine work. I must say that I failed in making the machine work. I knew after trying the best I could to make the Rosback machine work, that unless we were successful in making some different that would make boxes that I had made a big mistake in taking up the proposition of manufacturing wirebound boxes. That would mean that I had left a good job for one that was of no account.

[fol. 748] 1161 Q. Did you keep on building boxes during the summer while you were waiting for the Dodge and Brown machines to be built?

A. Oh, very few.

Q. What did you do to employ yourself?

A. We were trying to make boxes, as Mr. Inwood had taken a contract with Mr. Russ, and we were making a great many of them by hand.

Q. Trying to fill that order in that way?

A. Trying to satisfy Mr. Russ.

* * * * * * *

1176 Q. Going back to the Rosback machine, did you make a former for that machine?

A. I did not.

Q. Did anybody make one while it was in use there?

A. There was one made while the machine was trying to be used.

Q. Who made it?

A. I think I made the former of wood, the first former I made, for the purpose of spacing off and assembling our cleats.

Q. When did you do that Mr. Lavenberg?

A. I think that was made in June.

Q. Describe that former.

A. The former was one straight strip of wood, the length of which a box-blank should be made, cutting our blocks which were step-mitered the same as cleats to be used on box-blanks, cutting them sufficient lengths for the spacing of cleats on box-blanks. These blocks were fastened on to the strips with nails. The formers were laid on a bench such as a carpenter or cabinetmaker would use, the veneer being cut to width and nailed fast to the cleats with small brads in order to hold them in their places, while the wire for binding was stapled on by hand. After removing this blank from these formers and folding it, it made a perfect wirebound box.

* * * * * * *

1185 Q. Now, later on that option was amended or another option embodying the same things and perhaps some others was given to you by Mr. Healy to the same territory?

A. Yes, sir.

Q. When was that?

A. On October 8th, I believe. At that time I had no reason to think but what the option might become valuable if Mr. Healy should purchase our inventions.

1186 At that time I knew that the Brown machine was [fol. 749] a success. I had installed it, and after making some changes in it, it had begun to work and I was satisfied we could make boxes in good shape. When I took the second option on October 8th, the enterprise looked more favorable. At that time the prospects began to look quite bright.

1214 Q. Mr. Lavenberg, in your cross-examination, counsel for complainant asked you this question, or in substance this: "In the meantime you were trying to make the Rosback machine work until you received the Flora machines," and you answered "Yes"?

A. I could not have understood the question, as such was not the case.

Q. What was the fact as to your trying to make the Rosback machine work, until when?

A. The fact was that we were at all times trying to make the Rosback machines work commercially, and I think it was late in September or October when we last tried to make the Rosback machine work by placing the Brown staplers on the same.

We were endeavoring merely to make the Rosback machines work until the Flora machines were finished. We were at all times trying to get the Rosback machine to making boxes from the fact that we were not giving our customers satisfaction with the number of boxes required, and we thought if we could get the Rosback machines to working so as to make commercial boxes that we would then give our customers better satisfaction.

(i) Certain parts of the deposition of Samuel M. Robinson on defendants-appellants' case, which deposition was commenced on January 30, 1906, and concluded on February 1, 1906, are offered in evidence, as follows:

DEPOSITION OF SAMUEL M. ROBINSON

1221 SAMUEL M. ROBINSON, one of the defendants, called as a witness on behalf of defendants and cross-complainant, testified:

Direct examination.

By Mr. Pickens:

I am one of the defendants in this suit; am 43 years of age; and have resided in South Bend, Indiana, for thirty years. When I was fourteen years old, I went into the employ of George Wyman & Co. After that, became one of [fol. 750] the company and was manager for twelve years. That reached over a period of 21 years. George Wyman & Company is in the dry goods business. I ceased my connection in the business of the company in the year 1900. Since that time my business has been real estate and investments, principally in South Bend, Indiana, although we have connections in other cities.

1222 My office is in South Bend, and I have a partner, James C. Staley. I am president of the National Wire Bound Box Company, and have been since its organ-

ization. The principal stockholders of that company are R. G. Inwood, Dr. Samuel Whitehall, Judge Walter Funk, Dr. Morey, George Muessell, Dr. Schell, George Loughman, Perry C. Lavenberg, and myself. There is one other also, George B. Thayer, Jr. All these stockholders whom I have named are residents of South Bend, excepting Dr. Schell and Mr. Thayer. There are other stockholders besides those.

I first met Mr. Healy on the 25th day of March, 1904. My attention was first called to the subject of the wire-bound box business about the first part of March, in 1904, by R. G. Inwood, who came into my office with a small box that he had showed to the Mishawaka Woolen Company. I learned from Mr. Inwood that a gentleman by the name of William P. Healy was the owner of patents covering
1223 this industry, and it led to my going to Chicago to meet Mr. Healy on the 25th day of March, 1904. Mr. Inwood also showed me an option given to him by Mr. Healy in which he had the right to organize a local company for some counties in Indiana and Michigan. I could not say whether Mr. Inwood showed me the option at that time or not. He came into my office two or three times. That was before I met Mr. Healy. I arranged with Mr. Inwood to go to Chicago and meet Mr. Healy.

* * * * * * *

1231 After the delivery to me of the option in regard to forming the South Bend Healy Box Company, we arranged to rent a factory, to have the large set of machines brought down to Chicago and installed in the plant. Mr. Rosback,—I was shown a guarantee by Mr. Rosback to put this large set of machines in working order so that they would make five hundred boxes in five hours, and Mr. Rosback came down to set up the machine. The machines were brought down and set up, and I think Mr. Rosback came here about the first of May and started to work on the machines, and was here for about six weeks trying to make [fol. 751] them run. He never succeeded in making them run. Mr. Brown and Mr. Ecklund of St. Joe, Mr. Lavenberg and Mr. Howard of St. Joe and Mr. Green also tried to make them run. Nobody succeeded in making them run. They could put the blanks through the box-blank machine but there was always defects in them. I will say that there

was possibly four or five thousand blanks run through the machine at different times, and about eight hundred of those were sold to Mr. Russ or the Russ Manufacturing Company for five and ten cents a box, because they were defective boxes. That was all of the large amount of blanks made that they would accept boxes made up from, and almost all those boxes had a large amount of hand work on them.

* * * * * * *

1237 Q. Now, after signing up the nine cities option, you may state what was done by you in connection with the wirebound box enterprise under that option?

A. I commenced to get ready to promote the nine cities option, and spent quite a good deal of money in doing so. Mr. Inwood, Mr. Lavenberg and Mr. Healy all told me at different times——

Mr. Simms: We object, unless it was in the presence of the complainant.

A. It was, most of the conversations were in the presence of Mr. Healy,—that they would soon have the machines running; that is speaking of the Rosback machines. I arranged with different parties to come to South Bend to see the machines in operation, but each time that I took any one out there, it was an utter failure as at no time were any of

1238 the Rosback machines running so that you could show them to a prospective customer. I had one man from the center of Indiana,—I was helping my brother Harry Robinson, who had an option from Mr. Healy on some territory in the central part of the State of Indiana, and he was very much,—well, I did not succeed in interesting him because the machine would not work, and various parties that I brought during the summer to see wirebound boxes being made all went away without being impressed or without, I should state, without doing business with me.

Q. Well, what was done, if anything, to make the business a success?

A. Along sometime in the latter part of May I believe there was an order placed by the South Bend Healy Box Company; that is it was placed for the South Bend Healy Box Company by Mr. Inwood with the St. Joseph Iron [fol. 752] Works for a machine that he and Mr. Lavenberg

had conceived the ideas of. This machine would make the blanks the same as the Rosback machine. Afterwards, some time along in June, this was changed, and Mr. Inwood and Lavenberg conceived the idea of making cleats in separate pieces. Just when they completed those ideas I do not exactly remember, but the machine being built at the St. Joseph Iron Works was completed near the early part of September, and they had it changed from time to time, to have it meet their ideas. When that was installed in the plant of the South Bend Healy Box Company, that is the first time, that was the first time that we made a box that was really commercial.

. . . . . .

1252 Cross-examination.

By Mr. Simms:

. . . . . .

1280 We never gave up hopes that we could make the Rosback machine work until the first of October. I don't think we ever gave up hopes of making that work until along sometime in September, when we finally abandoned all hopes of making it work.

Q. What did you mean when you said that you knew at the time you were making those representations to Mr. Williams and Mr. Rood that you were not going to turn over them a gold brick like the Rosback machine?

A. Well, it had been a gold brick to me. I had bought it and brought it down here to make boxes, and it was worse than a gold brick because I had spent money on it, and when you buy a gold brick you have it, and that's the end of it.

I had learned it was a gold brick at the time I talked with Mr. Williams. We still had hopes of making it work, and if we made it work we might get back our money on it.

. . . . . .

1295 I showed people the Rosback machine a number of times. I quit showing it I should say the latter part of September. I went on showing it up to the latter part of September. It was on the floor, you could not show any of the other machinery without showing it.

Q. You stated in your examination in chief yesterday that you had put people off from coming down to your shop until the St. Joe machine was completed and installed, because the other would not work?

A. I did; but at the same time some people came any way and I showed them what was there. I will assure you. [fol. 753] that I did not take any more people out there than I could help, to show it.

I knew it was not a good thing to show that to anybody, because we lost a customer every time. If the machine had made boxes commercially it would have been a great benefit to me to show the Rosback machine. I was not trying to make so much money out of the manufacture of boxes in the local company, although I considered my stock there might be valuable there some day, but the money that I would derive would be from the promotion, and I knew if a man would come and see a machine break down while he was looking at it it would give it a black eye.

1926 In showing it, we tried to gloss it over, and tell them we expected to have it remedied and invite them back to see it again.

* * * * * * *

1314 Along about between the 20th and 25th of September, I concluded that it was a good gamble to invest some money in them, on the proposition that Inwood and Lavenberg might be able to hold these inventions. Several reasons aided me in reaching the conclusion that it was a good gamble. In the first place the failure after good, honest, hard efforts to make the Rosback machines work, and the boxes that it turned out were not really commercial boxes; the veneer when the least bit crooked would split, and make a round corner, and if it warped any would leave a large hole and taking it as a whole and sizing it up, I did not consider that the proposition as presented by Mr. Healy was commercial at all after the experimenting that had been done; and that the inventions that Mr. Inwood and Mr. Lavenberg had made, and the lap-cornered box, and after seeing some of the different trades and getting their ideas, I concluded that they had in their inventions a merchantable box and that Mr. Healy would necessarily, if he wanted to proceed with the business of manufacturing

wirebound boxes, would necessarily have to get control of these inventions, and as long as he had refused to compensate Mr. Inwood and take them, I thought he would be willing at some future date, when he found he was up against it, to buy them.

* * * * * * *

[fol. 754] (j) Certain parts of the deposition of Richard G. Inwood, recalled for further cross-examination on defendants-appellants' opening case, which deposition was commenced on February 1, 1906, and concluded on the same day, are offered in evidence as follows:

DEPOSITION OF RICHARD G. INWOOD (RECALLED)

1351 R. G. INWOOD, recalled for further cross-examination by Mr. Simms:

* * * * * * *

1360 Complainant's Exhibit No. 152 is a letter written by W. P. Healy to R. G. Inwood, dated April 26, 1904.

1361 Complainant's Exhibit 152 offered in evidence and reads as follows:

"Chicago, April 26, 1904.

R. G. Inwood, Esq., South Bend.

DEAR SIR: Your letter and telegram received. I have employed a carpenter to crate the machines and tomorrow I will try to find a teamster to take them to the depot. We will not need Mr. Rosback's assistance in setting them running. I expect to be able to go to South Bend either Thursday or Friday. I have executed the license to the South Bend Healy Co.

"Rosback cannot make trouble for any one connected with my machine. He tried to make me believe while in Paris that he could get up another machine that would not infringe mine, but after hearing his explanation I declined to spend any more money on his inventions, because he has got to the end of his rope; he has exhausted himself and I

changed off for Mr. Flora nearly three years ago. He is paid in full for all his inventions that I am using, and Mr. J. W. Dyrenforth drew the contract to that effect.

Yours truly, W. P. Healy."

"I left Philadelphia County of the general license because Mr. Robinson told me that he wants a special option on that place. If he has changed his mind I will put it back in the general license.

W. P. H."

[fol. 755] 1362 Q. Some time in May, 1904, do you remember of sending down a box and box blank to the St. Joseph Iron Works prior to the time when you placed your order for the Brown machine, and when the building of the Brown machine was under discussion between yourself and the St. Joseph Iron Works people?

A. I remember of sending one of the Healy boxes, round cornered box, and a blank with cleats running the length of the blank to the St. Joseph Iron Works. My impression is that that was sent to that firm after we had made a verbal contract and before the check and written order was sent.

Q. It was while the matter of the building of the machine was under discussion.

A. Yes, sir.

Q. And it was sent down to furnish whatever information that would furnish to the St. Joseph Iron Works?

A. It was sent down at Mr. Brown's request.

Q. For the purpose of giving them any light that these things would throw upon the building of the machine?

A. Yes, sir.

* * * * * * *

(k) Certain parts of the deposition of Charles E. Russ, on defendants-appellants' opening case, which deposition was commenced on February 1, 1906, and concluded the same day, are offered in evidence as follows:

DEPOSITION OF CHARLES E. RUSS

1364 CHARLES E. RUSS, called as a witness on behalf of the defendants and cross-complainant, testified:

Direct examination.

By Mr. Pickens:

I reside in South Bend, Indiana, and am 39 years of age. I have resided in South Bend for 19 years, and am manufacturer of groceries sundries. In connection with my manufactory, I sell and ship the products, and use boxes in connection with that business. I have purchased wire-bound boxes from the South Bend Healy Box Company. The first box we purchased was in the summer of 1904, I think it was; the first summer they were in operation here. In the summer the first purchase was something like eight hundred or a thousand boxes, eight hundred I should say. [fol. 756] Q. Can you describe the character of those boxes as to whether they were lap-covered or round-cornered?

A. Well, they were made from veneer, and where the veneer was stitched in and where the corners came there was a groove for the corners to break over.

1365 Q. In your first lot of those boxes that you bought you may state whether or not they were satisfactory boxes or was there any trouble in connection with the use of them?

A. Well, they were not satisfactory.

Q. What was the trouble?

A. Well, in this breaking of the corners, they did not break where the groove was made. The veneer was oftentimes cross-grained, they would break crooked, the corners, made by the bending of the box. They were not merchantable.

They were not commercial boxes. We afterwards bought boxes with lap-corners.

Q. How were they in reference to being commercial?

A. Well, they were a good box.

. . . . . .

(1) Certain parts of the deposition of William P. Healy, on plaintiff-appellee's rebuttal, which deposition was commenced on March 15, 1906, and concluded on May 15, 1906, are offered in evidence as follows:

REBUTTAL DEPOSITION OF WILLIAM P. HEALY

1428 WILLIAM P. HEALY, the complainant and cross-defendant, recalled as witness on his own behalf in rebuttal, testified:

Direct examination.

By Mr. Simms:

1429 Q. I will ask you, Mr. Healy, to describe the machines first made under the Knudtson and Uhri patents and the Rosback patent, with respect to whether those machines had intermittent or continuous motion in the formers or workholders?

A. There were no portable formers or workholders but there were guides for the cleats of the box blank, guides for the box blank itself.

Q. State what is meant by intermittent motion as applied to the machine manufactured under the Knudtson and Uhri [fol. 757] patents, and the machine built by Uhri and the first machine built by Rosback?

A. Intermittent motion of the box blank is in the feed of the mechanism of the machine the box blank is carried through intermittently, that is with a sort of jerky motion, that way going that way (indicating with the hand). I think the word "intermittent" explains itself without any further explanation.

1430 The machine made that had a continuous motion was the second machine built by Mr. Rosback in 1898. That was the first machine of continuous motion, and it was a mere experiment, that set of machines. We first had the Knudtson and Uhri machine, that was intermittent, and that Mr. Uhri built a machine and that was intermittent, built that in 1895, and then Mr. Rosback built his first machine which was also intermittent and supposed to be an improvement of the Knudtson and Uhri machine, and that was built in 1896, and then Rosback, Mr. Rosback claimed

to have made another invention with the continuous motion, and I said, "Well, let us build a machine and get out a patent so that we can control all there is of the art," and then we consulted Mr. J. W. Dyrenforth, and he advised us that it did not infringe the first machine built by Rosback, and we got a patent on the continuous motion, but without any intention of doing anything other than simply controlling the art.

Q. Did you follow up the idea of continuous motion in the machines, or did you abandon that?

A. I built a little model set to go to the Paris Exposition, with continuous motion, because we just had experience in building the first set and we made some improvements.

We went back to the intermittent motion machine. After I came back from the Paris Exposition, I made up my mind to have nothing more to do with Mr. Rosback. I went to J. W. Dyrenforth and told him my predicament, and that I wanted to get an honest promoter, and a competent one and he recommended Mr. Flora to me as a first class mechanic and business man. Mr. Flora came and saw my small set of machines at 213 East 57th Street, Chicago, and I gave him a contract of promotion to promote Chicago, and he fixed up that small set of machines so that they could run very nicely for exhibition purposes, and I took him out to see the large set of Rosback machines, where they were stored at Rosback's shop, and then he worked at those for [fol. 758] some time at the continuous motion proposition and finally Mr. Flora came to me one day, and said he
1431 had a new invention of a box-blank machine with an intermittent motion. So then I authorized him to drop working on a continuous motion Rosback machine and take up his own and I adopted him and got a patent for it from the United States and Mr. Flora assigned me the patent without making any charge for it.

That machine was built with an intermittent motion. And then we dropped the continuous motion idea altogether and that was in 1902 or 1903, long before I met Mr. Robinson. It was a continuous motion machine that was installed in the South Bend Healy Box Company. That was the first Rosback machine, the first machine that he built of continuous motion.

* * * * * * *

1433 Q. What have you to say as to whether the boxes made were popular, proved to be popular from 1894 down to August, 1905?

A. The Rosback machines built in 1898, we made about three or four thousand boxes in experimenting that I thought could be used commercially. I made a present of them to Mr. Rosback's son, because I never sold a box yet, and he sold a hundred to Garlock & Company, and he sold other lots to some hardware people, and Mr. Rosback used quite a number himself. I saw him shipping some of these boxes that were 9⅝ inches wide, 14½ inches deep by 18½ inches long inside measurement, top and bottom 3/15, and ⅜ on the end, and they carried 190 pounds of steel staples safely and securely down south to the Biltmore Farm at North Carolina, and they got down there safely, and then quite a number were shipped down to Texas.

* * * * * * *

1444 They did not have to put them in with screws to use my box, they just twist the wire. Mr. Flora saw the large set of Rosback machines and experimented with the small set of Rosback machines. I took him out there and introduced him to Mr. Rosback, and Mr. Rosback and he discussed the machine there. That is the Mr. Flora I have described as being an inventor and the Flora recommended to me by Mr. Dyrenforth.

* * * * * * *

1447 Q. State whom it was that you issued options to in connection with Mr. Flora in the City of Chicago or elsewhere?

A. Mr. Inwood, testified that I issued options to Mr. Bullard, John B. Knight, a man connected with Montgomery [fol. 759] Ward & Company, a lumberman on the 16th floor of the Marquette Building, Mr. Lewis, in the refrigerator business, Professor Castle, and then an Iowa banker named Clark, a man from Wisconsin, a friend of Professor Castle's, William T. Block, Wells & Goodhue, J. L. Clough, O. W. Fowler, Mr. Pike of St. Louis, Mr. Cleveland and Mr. Clark of Chicago. Now, in regard to Mr. Bullard, I never issued an option to him in my life. He was a friend

of Mr. Flora's and he was brought to me by Mr.
1448 Flora, he was a customer of his, a prospective investor, and not a promoter; but Mr. Flora failed to get him to take an interest. John B. Knight is a real estate man. I never gave him an option. I was introduced to him by Mr. Flora. Mr. Flora thought he would be an investor, but he did not invest. I think he wanted to promote himself, but I did not issue him any option. And then the man connected with Montgomery Ward & Company I don't know who that man was, and knew nothing about that; have no remembrance of him at all, and my best recollection is that I never issued an option to such a man as that. The lumberman on the 16th floor of the Marquette Building, I remember him distinctly, he was a lumberman down in Tennessee. I think he was introduced to me by Mr. Flora. I tried to get him to take an option and he considered it for about ten days, and finally told me he had no time. Mr. Lewis in the refrigerating business I knew nothing about. I have looked up my records and find no record of him. Professor Castle never was a promoter, and never got an option from me. He is a professor in the Chicago University, and he was a prospective investor, a friend of Mr. Flora's. The Iowa banker he didn't ask for an option, and never got one. The man from Wisconsin, a friend of Professor Castle's. He talked about investing along with Professor Castle. He never asked for an option and never got one. William T. Block, he talked about getting an United States license, of raising a company to get a United States license rather. I don't remember of having issued Mr. Block a form of option anywhere, but I did have several talks with him and his friends about starting a company I think in Cincinnati. Wells & Goodhue is really Wells Goodhue, the record says Wells & Goodhue. He took a contract of promotion from me for Atlanta, Georgia, for himself, and he was unable to promote it down there. Mr. Goodhue was a good man, all of these men were good men, and men that I could place confidence in. Mr. Goodhue was also interested with Mr. Flora and Mr. Pike in a contract [fol. 760] of promotion for St. Louis and Chicago, in one contract, afterwards, Mr. Pike dropped out; and Mr. Clough, who is a friend of Mr. Flora, I gave Mr. Clough a contract to promote Indianapolis. Mr. O. W. Fowler was

a friend of Mr. Clough's at Indianapolis, and he was a sort of a promoter down there, and he got an option from me to promote somewhere down in Indiana, in the gas belt.

Then Mr. Pike I have referred to and Mr. Cleveland
1449 and Mr. Clark of Chicago, I also testified that they had an option. The failure of these men who were trying to promote my box enterprise was simply because in many cases they did not understand their business. They did not know how to promote; they were not promoters, not one of them, except Mr. Fowler was a promoter in a small way down in Indiana.

* * * * * * *

1470 The majority of the boxes made on the Rosback machine by the South Bend Healy Box Company were poor, the poorest I ever saw.

Q. You may state if you know any reasons why those boxes were poorly made by the Rosback machine?

A. Well, the box-blank machine was not to blame, the principal machine, and I want to say right here that the box-blank machine is the principal machine, that was not to blame, for the round corner, and that is the principal fault they found. The step-miter machine would be to blame if any machine was to blame, but they did not set the step miter machine right so that it did not score or make the groove, they did not have that in position properly, that was one reason, so that it did not cut the groove down far enough in the box blank so as to fold right. I charge that to the inefficiency of the foreman of the shop. It is a well known fact that iron workers are not good box makers.

Mr. Lavenberg was an iron worker. He never made a box until he came over there. Another reason was that they had very poor veneer, and it warped. They bought it when it was green and wet and it turned it all sorts of shapes. An automatic machine of that kind requires pretty good veneer. That is another reason why it did not make good boxes. It required a man of some skill to be a good box maker. That is, the men themselves working at the machine need not be skilled laborers at all, but the foreman should be.

1508 Q. You heard Mr. Inwood speak about the Brown Company? Did you ever hear of that company?

A. There never was such a company as that.

[fol. 761] Q. What company is Mr. Brown connected with?

A. The St. Joseph Iron Works, for the last twenty years he has been connected with that company and no other company as far I know.

1519 Q. Up to September 13th, what break or trouble of any kind had developed or taken place between you?

A. None whatever, up to the time that Mr. Inwood refused to assign the invention, none whatever.

1520 Q. Up to that time things had been harmonious.

A. Yes, sir.

Q. And you had confidence in these people?

A. Yes, sir.

Q. Mr. Inwood said in his testimony that a greater part of the time from the middle of May to the middle of September, negotiations were conducted through himself or Mr. Lavenberg, is Mr. Inwood correct in that statement?

A. No, he is not. Mr. Lavenberg never did anything in the line of negotiations with me in the box enterprise.

Q. If I understood you you said a moment ago that during all the time up to the break you talked promotion matters with Mr. Robinson chiefly?

A. Yes, sir.

Q. And machine matters with Mr. Inwood and Mr. Robinson?

A. That is it, sir.

1521 Q. You had some dealings with the Sandage Steel Skein Company?

A. I did.

Q. Through Mr. Inwood?

A. Yes, sir.

Q. I would like you to state just what they were?

A. Mr. Inwood spoke to me first about giving them a box-blank machine to build. He thought they could build one for $500. I did not think they could build anything there. They did not have the tools, and their financial condition was no good, but he said that his brother William Inwood advised them that they could, and I authorized him to negotiate with them to build a step-miter machine at a cost not to exceed $125. Then the question of building

a box-blank machine came up and he thought it would be a good idea to get the Sandage Company to build one, and I sent him to negotiate with them, and they finally agreed to build one for me for $500, and he conducted all these negotiations, Mr. Inwood did, with his brother of the Sandage Steel Skein Company, and finally it was agreed upon and I [fol. 762] drew that letter which is in evidence and read it over to Mr. Inwood carefully, and we made some changes in it, and erasures, and I rewrote it and gave it to Mr. Inwood, and he took it to his brother and brought me back that letter from his brother that is in evidence.

Q. You refer to the letter taken to the Sandage Steel Skein Company?

A. Yes, sir.

That letter he brought to me after he took this proposition to them. It was not sealed. He knew what was in it, and we read it over there together. I think in that letter it was understood that the Sandage Steel Skein Company could use the patterns of the Brown machine, that is, if the St. Joseph Company would lend the patterns the machine could be built cheaper.

Q. What was said by Mr. Inwood about these patterns being his and his being yours, and it was for you to consent that the Sandage Steel Skein Company should use them?

A. Nothing of that kind was said.

Q. Was that question raised?

A. No, sir, but the question of using the patterns was raised in the way I told you.

Q. These patterns were not patentable?

A. No, sir, anybody can use them. It was the combination of these different things that was patentable.

* * * * * * *

1536 I saw a number of lapped boxes made on the Rosback machine when I came back from the second trip to St. Louis. They wrote me they were making lapped boxes on the 8th of July, 1904. I got back about the 20th and then they were making them and delivering them to Mr. Russ along about that time.

Q. I place in your hands Complainant's Exhibits marked

"K1, K2 and K3," and ask you to state what they are?

*1537 A. "K1 and K2" constitute a former or workholder similar to a former or workholder used on the Rosback machine before they got the Brown machine. It was used in July and August. K1 was placed into one of the guides for the cleats in the Rosback box-blank machine and K2 was placed in the other guide but before being placed in the cleats they placed in K1 and K2 between the blocks on K1 and K2 the same as I am now describing, and then boards were placed on top of the cleats sufficient in length to make the desired box blank. These boards were tacked on with metal brads to the cleats so as to keep them [fol. 763] from moving and then the whole thing was placed in the Rosback machine, and fed through the machine, and the wire was stapled thereon to the box blank while going through the machine. In that way they made a box blank that would lap on the Rosback machine.

Mr. Simms: Complainant introduces in evidence his Exhibits K1, K2 and K3.

The articles above described offered in evidence and marked "Complainant's Exhibits K1, K2 and K3."

To describe how the workholder was fed through the machine after the box blank material was placed thereon, at the end of the workholder there was a cross-piece of metal which was attached to an endless chain. This endless chain fed the metal piece through the machine, and the metal piece carried the workholder through in that manner, being pushed through (indicating). By that means it was put through the machine.

The strips of the former were held in place in the guides of the Rosback machine, they could not move out of it. Exhibits K1 and K2 were held in place by guides themselves. They were permanent guides in the Rosback machine, and these guides were adjustable. You could put them apart or close together to accommodate the size of the specific box you desired to make. When they were thus put in place they were immovable for the time being, and they held K1 and K2 in the right place. And then furthermore in the Rosback machine there was a strip of metal right immediately above the board constituting the box

blank which would keep them from mounting on each other, there was a strip of flat metal running along above these boards which kept them down and that was adjustable.

1538 Q. Was the former which you have just described as being a facsimile of the former used in the Rosback machine a portable former?

A. These two are. I call these formed K1 and K2. Of course, these are portable. They were not portable formers used like on the Brown machine, but these two pieces, I call these formers and these certainly are portable. I refer to K1 and K2.

The boards constituting the box blank were laid on the cleats before the former was put into the machine. The whole thing was put in together. They could not be tacked on afterwards, because the metal piece prevented it.

* * * * * * *

1545 Complaintant's Exhibit 179 is a ccertified copy, certified by the secretary of state of the State of Illinois [fol. 764] of the order of cancellation entered against the charter of the Wire Bound Packing Box Company, a
1546 copy of letter written or signed by Dudley M. Shively and the answer thereto, also a copy of the application filed with affidavit attached setting aside the order of cancellation, also the annual report filed for the year ending March 1, 1905, of the Wire Bound Packing Box Company.

Complainant's Exhibit 179 offered in evidence and reads as follows:

EXTRACT FROM COMPLAINANT'S EXHIBIT 179, W. H. HOLWAY, NOTARY PUBLIC.

* * * * * * *

STATE OF ILLINOIS,
County of Cook, ss:

1550 William P. Healy of the City of Chicago, being duly sworn, deposes and says that he is the president of the Wire Bound Packing Box Company mentioned in the foregoing petition and makes this affidavit on its behalf.

That the manufacture of wirebound boxes was until the past few months an experimental enterprise, that after expending a considerable sum of money in endeavoring to perfect its automatic machines and introduce the boxes into public use, the said company was pecuniarily unable without assistance to proceed further, that said company in November, 1895, entered into an agreement with the Wire Bound Box Company, a corporation organized under the laws of the State of Michigan, to carry on the business and pay to said Wire Bound Packing Box Company of Illinois a royalty on sales of boxes, that afterwards in January, 1898, the said Michigan company became embarrassed after expending several thousand dollars in efforts to perfect the machinery to manufacture such boxes, and by consent of said Wire Bound Packing Box Company of Illinois, the said Michigan company granted a license to this deponent to carry on the business and reserved a royalty on sales of boxes.

This deponent says that since the enterprise was first started in 1894, the said two companies and this deponent have expended over sixty thousand dollars in endeavoring to make it successful.

That in March, 1900, this deponent went to the Paris Exposition in the interests of said enterprise and exhibited a set of machines for manufacturing such wire boxes and [fol. 765] was awarded a silver medal by the exposition authorities; and afterwards this deponent exhibited said machines in London and did not return to Chicago until June, 1901, that this deponent had no actual knowledge of the passage of said act of 1901 requiring reports from corporations and only learned about it a short time ago.

That this deponent has within the past six months built five machines and is now building two more machines at a cost of several thousand dollars to manufacture such wire-bound boxes.

1551 That in May last this deponent succeeded in getting a factory started which is now making boxes by machines covered by the patents of said Wire Bound Packing Box Company and said company will be entitled to the royalty reserved by it in the license to this deponent as aforesaid and this deponent is in hopes of very soon starting other factories from which said Wire Bound Packing

Box Company will have an income from royalty on sales of boxes. This deponent shows that he has been recently informed that an entry has been made in the office of the secretary of state cancelling the articles of association of said Wire Bound Packing Box Company for failure to file the report and pay the fees prescribed by the Act contained on pages 124-5-6 of the Session Laws of 1901 of this state and this deponent respectfully prays that such cancellation be set aside for the following reasons:

That in the month of October, 1895, this deponent being then secretary of said Wire Bound Packing Box Company had some correspondence with the secretary of state in regard to filing an affidavit on behalf of said company under the anti-trust act contained on pages 89-90, Sessions Laws of 1893, that this deponent in said month of October, 1895, filed in the office of the secretary of state the said affidavit and the post office address of said Wire Bound Packing Box Company; that such post office address was given by this deponent as 515 Chamber of Commerce, Chicago, Illinois, that such address has ever since continued to be and is now 515 Chamber of Commerce aforesaid, and this deponent says that he was then and ever since has been and is now sole manager of said company and that no blank forms for making the report required by the act of 1901 have ever been received by said company from the office of the secretary of state.

This deponent shows that the secretary of state has no jurisdiction under said act of 1901 to enter up the cancellation of the articles of association of a corporation that has filed its post office address in the office of the secretary [fol. 766] of state until blank forms of reports are forwarded to such address and that there is no authority to notify any such corporation by advertisement when such post office address is so filed with the secretary of state.

This deponent shows that he is and has been president of said company for the past eight years and upwards and has attended to all its business during that time.

William P. Healy. (Seal.)

State of Illinois,
County of Cook, ss:

1552 William P. Healy, being duly sworn, deposes and says that he has read the foregoing affidavit by him subscribed and knows the contents thereof and that the same is true of his own knowledge, except as to those matters stated on information and belief and as to those he believes it to be true.

Wm. Freudenberg, Notary Public. (Seal.)

1553 Cross-examination.

By Mr. Pickens:

Q. Mr. Healy, in your testimony in this case yesterday you were asked by your counsel this question: "It has been stated by Mr. Inwood, if I remember it correctly, that the boxes made by the Rosback machines were not commercial boxes, is that a fact"? To which you made answer, "It is not a fact. I never heard any such claim like that until it was made in Mr. Inwood's testimony." Now you testified, did you not, on a former examination in this case that you told Mr. Inwood and Mr. Robinson that these were not commercial machines?

A. The old set of Rosback machines?

But I did not say anything about the new Rosback machines that were going to be built as improved by Mr. Flora. I was talking about the same machines when asked this question yesterday by Mr. Simms, the old machines built in 1898.

Q. What do you mean by saying that you never heard any such claim like that until it was made by Mr. Inwood in his testimony, when you stated to Mr. Inwood and Mr. Robinson that the machines were not commercial machines?

A. I was referring to the boxes and not the machines.

Q. What distinction is there between non-commercial [fol. 767] machines and non-commercial boxes made on that machine?

A. There is this difference that the machines built by Rosback were not built well, but we expected that we would build machines, improved by Mr. Flora that would be commercial.

Q. Well, a commercial machine is not a commercial machine that will not make commercial boxes?

A. I always claimed that they were commercial boxes. I never admitted that they were not commercial; even when made on the poor Rosback machines, they were commercial boxes.

Q. Well, you say you made, that there were a large number of boxes made upon these machines, and you gave them to Rosback's son?

1556 A. Yes, sir. Not a large number, I said about three or four hundred.

Those were positively commercial boxes. I was giving those away because they were a small number, and because I did not care to sell boxes. That may have been a matter of pride on my part, but I did not want to sell boxes, and so I said to Mr. Rosback's son who was about 16 or 17 years old, "you can have those boxes and do what you want to with them" and they went off like hot cakes. If a box is fit for any one article of commerce it is a commercial box. If it was not fit for Mr. Russ' business yet it may have been for some one else's, and the fact that one man says a box is not fit for his business, that does not make a non-commercial box.

Q. You stated yesterday in your examination yesterday, in your testimony yesterday, that the boxes built under these patents of yours were not good for shipment of all kinds of merchandise?

A. I did, sir.

Q. And in testifying upon that question you went on to state the various kinds of merchandise which these boxes would carry?

A. Yes, sir; I had applications from people——

Q. Did you not state in the conference that you had with Mr. Robinson and Mr. Inwood at the time they came to see you, regarding this enterprise in March, 1904, that these boxes were practical for the purpose of carrying all sorts of merchandise?

A. I never said that. There is no one box capable of carrying all kinds of merchandise. Any box man will tell you that. The lapped box is not fit for all kinds of merchandise any more than the box I was making.

[fol. 768] Q. I believe you admit, that you testified in your first examination in this case that you told Messrs. Robinson and Inwood that these were not commercial machines?

A. The old machines, yes, sir.

Q. Well, the machines that were sent down to South Bend afterwards?

A. Yes, sir.

Q. In testifying yesterday concerning the history written by you in the fall of 1901, that is at the time the
1557 history was written by you, "Mr. Flora and myself agreed that the machines of Rosback were commercial machines by being fixed up a little bit with some improvements that he would make, and that they were all right as commercial machines"?

A. Yes, sir.

Q. Well, then, how is it that you say you did not say to these gentlemen, Messrs. Inwood and Robinson that the machines were not commercial machines?

A. I changed my mind. Mr. Flora and myself agreed that they would be commercial machines with some improvements he would make; that was in 1901 that we agreed upon that, in the fall. But I changed my mind on a good many matters in regard to the box enterprise by the spring of 1904 and that was one of them.

Q. In the meantime then from 1901 to 1904 you had decided that these were not commercial machines?

A. Up to that time, yes sir. As early as April 15, 1902, I refused to give them except as sample boxes.

Q. When did you come to the conclusion that they were not commercial machines?

A. Well, about some time in the winter of 1902, some time probably between February and April.

Q. What led you to that conclusion?

A. Having the fact brought to my mind.

Q. What are the facts?

A. I cannot tell you now exactly—well, I have found out more about machinery, I have talked a great deal with Mr. Inwood, Mr. Flora and others, and I came to the conclusion that these machines were not well built enough to be commercial machines, even after Mr. Flora improved them, that they would only be fit for making sample boxes.

* * * * * * *

1561 Q. You testified yesterday that the Rosback machines which were sent down to South Bend, were in bad condition?

1562 A. I thought they were.

[fol. 769] Q. That they had laid about here in dirent places and had gotten dusty and some of them were apart and so forth?

A. Yes, sir, and rusty.

Q. You spent some money, did you not, in putting these machines in condition before they were sent down there?

A. I spent fifty dollars in getting them cleaned up a short time before that.

Q. Didn't you spend $175 in getting those machines in condition to be sent down there?

A. That was the box-blank machine. It was a year before that, long before. I had no application from the South Bend people at that time. Mr. Rosback told me he thought he could fix the staple driver so as to make it all right, and I said, if you can do that all right.

Q. When was that?

A. 1903.

Q. You spent some money on that, did you?

A. Yes, sir.

Q. Did you not spend some money after that, some $175 to put the machine in shape?

A. No, that was $175 I spent then; but I had the box-blank machine cleaned up and spent fifty dollars then, I think.

Q. That was preparatory to sending them down to South Bend?

A. No, sir.

That was done two or three months before that.

I was spending money on that machine at that time to have it cleaned up because I was expecting to get some people to come around and look at it, and I wanted to have it in good shape, the principal machine. And then I did not know whether it was in good shape after he had it cleaned up, because Rosback had disappointed me so much. I do not know anything about whether it was put in good shape. I told him and hired him to clean them up.

1563 Q. At that time you were at outs with Mr. Rosback, weren't you?

A. Yes, sir, I parted with him in Paris under very satisfactory conditions, and I never employed him for anything after that for anything I could avoid, but I did that because——

Q. Still you supposed you were paying him for putting the machines in good shape?

A. No, sir, simply to clean off the rust, so as to be more satisfactory to look at.

[fol. 770] Q. Where was that machine from the time you spent the fifty dollars on it to have the rust cleaned off until it was sent to South Bend?

A. In the open shop of Rosback.

Q. Did you see it from the time you spent this money on it until it was sent to South Bend?

A. Yes, sir, several times. I brought several men to see it with the view of investment. I will tell you now I did not have it cleaned up for the purpose of having it sent down to South Bend.

We did have that machine cleaned long before I sent it down there, we did not run it during the spring of 1904. Mr. Rosback made a couple of poor blanks on it that was not perfect, by hand, but we did not run it at all. He put them through the machine by hand, and it was a very imperfect blank. The wire did not catch in the middle at all.

Q. Was the making of those two blanks the extent that machine was run during the winter and summer of 1904?

A. I will say there was not over four or five made.

* * * * * * *

1580 Q. Notwithstanding that you proceeded to make an application for and obtain a patent in England for that machine?

A. No, sir, I did not, sir. There are other machines as well as that machine. The Saranac Machine Company is building a Jumbo,—they don't call them Jumbos, but they do the same work, and they are almost the same shape, and I have bought two of those machines myself from this company and the agreement I had with them was that if there was anything inventable upon those machines that I was to be the owner of it, and that agreement is in writing.

That was my agreement with the Saranac Machine Company.

Q. I am not asking you about that company, I am asking you about this clincher on the so-called Jumbo machine, wasn't it understood by you that the invention thereon was claimed by Mr. Ecklund at the time you made application for a patent thereon in Great Britain?

A. I think that is the fact that he claims to own it, but I was shown by Mr. Craig a machine that worked in the same way, and which had been sold for four or five
1581 years before that, and I had a contract from them, from the Saranac Machine Company that I could apply for any invention that was upon this machine that [fol. 771] they built for me, and in applying for this invention I did not have the St. Joe people so much in mind as I did the Saranac people from whom I had obtained these machines and under this contract I had with them.

* * * * * * *

1594 Q. Mr. Healy, you testified on Thursday that it was at no time contemplated or talked of between you and Mr. Robinson and Mr. Inwood, that the large
1595 Rosback machine was to be permanently installed and relied upon in the South Bend Healy Box Company's plant for making commercial boxes. Is that correct?

A. My answer is correct.

That was relied on to make sample boxes. The Flora set of machines first and afterwards the Brown machine, were relied upon to make commercial boxes. We did not rely upon the Rosback machine to make boxes commercially. That was abandoned before I ever knew Mr. Robinson, absolutely abandoned. When the machine was shipped down there we relied upon the Flora machine. I expected that the South Bend Healy Box Company in making commercial boxes would use the Flora machine.

Q. And you at that time had no knowledge of the Brown machine?

A. At what time?

Q. It was not started at that time?

A. What time is that, what date, when you say that time?

Q. I mean at the time when the machines were brought down to South Bend?

A. Yes, sir, I had no idea whatever of building any machine except the Flora.

Q. And you expected if the South Bend Healy Box Company made commercial boxes they would make them on Flora machines or machines made under the Flora patent?

A. Yes, sir; made under the Flora drawings.

Q. Now, when you thought of having the machine built at the Dodge Company's establishment, that was to be built upon the Flora drawings?

A. Yes, sir.

* * * * * * *

1601 Q. Mr. Healy, when we were taking proofs in this case on the 15th of last March, you introduced as exhibits a model marked K1, K2 and K3. When did you [fol. 772] first see the original workholder or former of which Exhibits K1 and K2 are models?

A. I saw these, I think, in June, 1904, that is my best remembrance of it, or July, on the Rosback machine.

Q. On the Rosback machine?

A. Yes, sir, they were made by Mr. Lavenberg, and they made box blanks with those formers.

These models K1 and K2 are substantially facsimile of formers or workholders which I saw used by Lavenberg. I never saw Mr. Lavenberg or Mr. Inwood use any other kind of former on the Rosback machine before I saw Lavenberg using the one similar to K1 and K2.

Q. Did you ever see him use one after that on any other machine?

A. The Brown machine had a non-adjustable former. They were using that on the Brown machine.

At the time I saw Lavenberg using this kind of a former that was the first time I ever saw a workholder or former used for the manufacture of a box blank.

1602 Q. How else could step mitered cleat sections like K3 be used by Mr. Lavenberg on the Rosback machine or any other machine except in connection with a former or workholder?

A. They could be used without this former K1 and K2, they could be used by putting the cleats in the permanent guides of the Rosback machine.

Q. How, explain how they could be used?

A. You put in the cleats of the permanent guides and then put the boards of the box blank back of the cleats and then the machine is put in motion and the cleats and boards were fed through the machine and stitching wire was stitched to them when they were going through.

To use step-mitered cleat sections like K3 on the Rosback or any other machine except in connection with a former or workholder, it would have to be put in a portable former, such as K1 and K2. These cleat sections could not be used except in connection with a former or workholder.

Q. Well, it is hardly probable, is it, that any one would go to the trouble and expense of getting up a machine for step-mitering short cleat segments unless they had some way planned of using the product of the machine, is it?

A. That is a hypothetical question. I cannot tell what would be in the minds of people, what they would do or would not do. I cannot answer the question very well, except the answer I have given. I cannot tell what is in the minds of people, what they would do or would not do, under a given set of facts.

[fol. 773] Q. Well, the plan of using a former would naturally precede the plan for making a machine to cut the cleat segments, would not?

A. It would where the enterprise was undeveloped, but in this enterprise the two went together. The former and the step-miter they were working on at the same time.

Q. As a matter of fact the former must have been invented prior to the step-miter machine?

1603 A. Not necessarily. They both went together. Of course one takes precedence of the other; one is used before the other. The step-miter was used first to make the cleats and then put in the former, but both were thought of at the same time, because I was there and saw what the people were doing.

1608 Q. I will ask you if you did not testify on your examination in this case, in chief, which testimony appears on page 257 of the record that your first trip was June 10th to 21st, and when you were going you gave Mr. Inwood the use of your bedroom to work on some drawings that he and Mr. Lavenberg were getting up for an adjustable former to be used on box-blank machines?

A. Yes, I so testified. I see it is this way, but I am of the impression when I came back that Mr. Inwood told me that he had seen Brown, and he had told him that he had given up the chain for the machine and had adapted a former in its place, and I asked Mr. Inwood if it required a former for every different size of box and he said it did. Well says I, I don't like that, there will be too many formers, and then he said that Mr. Lavenberg told him that he had no doubt but what he could make an adjustable former himself, but that Mr. Brown said it could not be done, that they could not make an adjustable former. That conversation took place after I came back from the first trip to St. Louis.

1610 Q. When was it he began working on the adjustable former?

A. Well, as I remember it I came home, the night I came home from St. Louis the first trip; I think it must be about the 20th of June, that Mr. Inwood told me all about it. That is the first time I heard about it.

Q. How long had he been working on it at that time?

A. He had commenced on it, he was going to commence on it immediately.

Q. He was going to commence on it.

A. Yes, sir, Mr. Inwood had only heard from Mr. Brown two or three days before that.

[fol. 774] Q. When was the non adjustable former adapted by Mr. Brown?

A. From what Mr. Inwood told me I think it was the 17th or 18th of June. That is, Mr. Brown told me he worked on the chain before he got on to the former at all, that would bring it about the middle of June, because the machine was ordered the 27th of May.

1612 Q. Well, at the time Mr. Inwood was working on the drawings for the adjustable former, Mr. Lavenberg was experimenting with the formers in the shop, was he not?

A. Yes, sir, that was after the 21st of June though, or the 20th of June.

Q. Why do you fix it for the 20th of June?

A. Because that is the date I arrived home, and that is the date that Mr. Inwood told me about it. That is the first time I heard of it, and, then, of course, I deferred to Mr. Inwood's views, because he knew more about machin-

ery than I did, especially when he told me that he thought Mr. Lavenberg could get up an adjustable former. That was the 20th or 21st of June, 1904.

Q. What time was it Rosback left?

A. The 8th of June, 1904.

Q. And you stated in your examination on direct that after Rosback left, Mr. Lavenberg took hold of it, and commenced experimenting with a former on the Rosback machine.

A. Some time afterwards, I should judge.

Q. Immediately afterwards?

A. No, sir, sometime afterwards in the month of July, they were experimenting with a former to make boxes. They did not make any boxes on the Rosback machine before the 5th or 6th or 7th of June, that is, lapped boxes.

* * * * * * *

1613 Q. Who made the formers of which K-1 and K-2 are models?

A. Those? Who made those (referring to the exhibits)?

Q. Who made the formers of which these are models?

A. Who made the formers of which these are models?

Q. Yes.

A. I think it was Mr. Lavenberg, but those here were made at the Saranac Machine Company's works. I described what I wanted to them.

Q. Let me see if I understand it. The models which you have introduced in evidence in this case, and which are marked Complainant's Exhibit K-1 and K-2, are models of formers made by Mr. Lavenberg?

[fol. 775] A. They are, sir, decidedly so.

Q. Then in these Exhibits K-1 and K-2 you have attempted to make a duplicate of the workholder or former invented by Mr. Lavenberg?

A. Yes, sir. I will say this, if you want it, that when I was leaving South Bend on the 20th of September Mr. Lavenberg came over to my room to get some things to carry to his place from my room, and he brought that former with him, and he said, "Here is a former, Mr. Healy, you take this with you, it may be some use to you hereafter," and I had to get it into a size to get it into my trunk and I took a piece of that with me down to St. Joe

and I had Mr. Craig use that as a guide for making those models.

Q. There was no former on the Rosback machine?

A. There was after Mr. Lavenberg made one.

Q. But before that?

A. No, sir, except a guide for the cleats.

* * * * * * *

1634 This former K1 and K2 was used on the Rosback machine which I sent to South Bend.

Q. Well, it was not practicable or commercial, was it? It would not make a commercial box?

A. Yes, sir.

Q. But you could not make boxes commercially, that is, in such a way that it would be reasonably possible to meet the demand.

A. Not on that machine, because it was poorly constructed, but you could on a good Rosback machine. You could use those so that they would make money for the party owning it.

Q. Well, there was no practical way, was there, for making a lapped-corner box on a Rosback machine?

A. With the aid of these formers here, Exhibit K1 and K2 you could make lapped-corner boxes on the Rosback machine, and they were made, plenty of them.

1635 They did not make any other kind of a box except lapped-corner boxes after July 7th, and they used the Rosback machine from July 7th until September 1, 1904. They were all made on the Rosback machine during those dates.

* * * * * * *

1667 Q. In your rebuttal testimony concerning Mr. Uhri, you said "he certainly should not have had any tears in his eyes as to what I did. He had no cause for tears on my account. I never cheated him out of any- [fol. 776] thing." There was nobody accusing you of cheating Mr. Uhri out of anything, was there?

1668 A. I thought that the inference might be drawn from Mr. Inwood's dramatic testimony about tears in his eyes, so I thought I would clinch that point so that

that inference could not be drawn. That is the reason I testified that way.

Q. Well, you got his patent No. 608,809 away from him without paying him so much in value as one red cent, did you not?

A. That was a bargain made with him by Mr. Henry Stephens before I joined the company. I did not make that bargain. But I will say that the machine was not worth one dollar that he built for us, and I threw it away for junk, the machine that he built for us, and the cost was about three or four thousand dollars that we got no value received for owing to the poor machine that he built for us. That patent 608,809 I do not regard good for anything.

* * * * * * *

1675 Redirect examination.

By Mr. Bulkey:

1682 Q. What conversation did you ever have with Inwood or Lavenberg relative to the information which they obtained and where they obtained it about a non-adjustable former?

A. That they got it from Mr. Brown. Mr. Inwood told me after I came back from the St. Louis Exposition that Mr. Brown told them he had given up the chain, running the machine by a chain and had adopted this non-adjustable former or workholder.

* * * * * * *

1683 The letter of Henry Stevens on page 14 of the prospectus, Complainant's Exhibit 119, refers to the Howenstine box that Mr. Stevens was then having made on the Knudtson and Uhri machines. That was an intercellular end box, and they had cleats in the middle of the box inside, and all the edges were bevelled including
1684 the cover where now I have a lapped cover, they had it bevelled. It was not near as good a box as the box I had afterwards made by Rosback on the Rosback machine. This box that Mr. Stevens refers to, while it was a good commercial box it was not as good as the one I made improvements on. That is a good box, as Mr. Stevens said, but I made an improvement on it by having the cover

[fol. 777] lapped, and some of the other edges partly lapped, and I did away with the inside middle cleats and I did away with the intercellular ends, on the suggestion of Mr. Stevens——

. . . . . .

1710 Complainant's Exhibit 184 is a contract entered into between myself and the Saranac Machine Company, a partnership of St. Joseph, Michigan, on the 27th day of October, 1904.

Contract offered in evidence as Complainant's Exhibit 184 and reads as follows:

"The Agreement made this 27th day of October, Nineteen Hundred and Four, between the Saranac Machine Co, a partnership of St. Joseph, Michigan, parties of the first part, and William P. Healy of Chicago, Illinois, party of the second part.

Witnesseth: Said parties of the first part hereby agree to build, finish and complete in good workmanlike manner, on or before November 28th, Nineteen Hundred and Four, a staple forming and driving machine of special construction, for fastening the ends of wirebound packing cases. Such machines shall be capable of making one hundred staples per minute, and fasten the ends of any size box from a minimum size of eight inches long, four inches wide, and two inches deep, to a maximum size of forty inches long, twenty-four inches wide, and thirty two inches deep, inside measure; the staples to be about three-eighths of an inch wide, and one inch long, and such additional length as will be necessary to make a good clinch; such staples to be driven through the cleat from the outside on the bias into the box through the end piece of the box, and then clinched

so that the ends of the staples are imbedded in the
1711 wood, and will not scratch the hands of those holding the box, nor injure the goods in such box. Such machine shall be so arranged that the operator shall be able to place the staples three or four inches apart.

Any invention or design made by the said parties of the first part, in devising or producing said machine, which the party of the second part may desire to have covered by letters patent in the United States and foreign countries,

shall belong to the said party of the second part, and said parties of the first part hereby agree to execute any and all papers which the party of the second part may deem necessary to vest in the party of the second part, his executors, administrators and assigns all the right, title and in-
[fol. 778] terest in said inventions or designs in the United States and foreign countries, and to execute all papers that may be necessary to obtain patent protection, at the cost of the party of the second part, his executors, administrators and assigns, in any country, upon the request of the party of the second part, his executors, administrators and assigns. Such machine, when built, shall be tested by the said parties of the first part, who hereby guarantee that it will do the work of fastening such ends as herein set forth, and will be a good commercial machine.

In Consideration whereof, said party of the second part, hereby agrees to pay the said parties of the first part, Two Hundred and Fifty Dollars for such machine, delivered f. o. b. St. Joseph, Michigan, Sixty two Dollars and Fifty cents ($62.50) down, and One Hundred and Eighty Seven Dollars and Fifty cents ($187.50) when such machine has been set up in the factory of said party of the second part and is found to do the work herein guaranteed by said parties of the first part.

Dated and signed in Duplicate, this 28th day of October, A. D. 1904.

Saranac Machine Co., by W. H. Ray. William P. Healy."

. . . . . .

1734 Q. Mr. Healy, you have testified that the lap cornered boxes were made and could be made on the Rosback machines. Do I understand you to mean commercially, in commercial quantities?

A. Oh no, the Rosback machine was not a commercial machine, but I saw boxes made on it, the lapped box.

Q. They were in the nature rather of an experiment than turning them out in commercial quantities?

A. I should say so; yes, sir.

[fol. 779] (m) Certain parts of the deposition of Richard G. Inwood on defendants-appellants' surrebuttal,

which deposition was commenced May 16, 1906, and concluded May 19, 1906, are offered in evidence, as follows:

SURREBUTTAL DEPOSITION OF RICHARD G. INWOOD

1745 RICHARD G. INWOOD, a witness heretofore produced on behalf of defendants, testified:

Direct examination.

By Mr. Murphy:

Q. Mr. Inwood, Mr. Healy has testified on the question of whether or not the boxes made on the Rosback machines were commercial, as follows: "I never heard any such claim like that until it was made in Mr. Inwood's testimony. On the contrary, he praised them up when he was helping Mr. Flora to get the Chicago option in 1901, that they were commercial boxes." Will you please state what efforts you made to make a sale of boxes made by the Rosback machines, and the facts in reference to any representations made by you concerning such boxes while in the employ of Mr. Flora in 1901?

A. When I was working for Mr. Flora I did state to different parties that I did consider the boxes commercial and salable, and I did so consider them at that time because I was told by Mr. Flora and Mr. Healy both that it was commercial, and it looked commercial.

However, in attempting to dispose of the boxes in South Bend I found that there were objections to it which I had not known of while working for Mr. Flora; that the veneer would open at the corners and the corners would be rounded, and for those reasons many different parties refused to use the box commercially.

1746 Mr. Healy states in his evidence in rebuttal that this was due to the fact that poor veneer was used. The veneer which was used in those boxes which I tried to sell, was veneer which was shipped over from Chicago with the machines and it was veneer which was thoroughly dry, having been in storage two or three years. It was nice veneer, cottonwood and basswood, and the boxes were made under the most favorable conditions, as far as material is concerned, that could be conceived of, and if this

trouble occurred with this kind of veneer, with the veneer which we had to purchase in the open market, the trouble would be greatly aggravated.

[fol. 780] I took the boxes to the Russ Company, the South Bend Fruit Company, the McHenry & Millhouse Company, and some five or six other users who did not consider the box commercial enough to give it a trial.

1747 I made four hundred or five hundred blanks on the machine. There were not many of them perfect, but I ran that many blanks through the machine. There were not any of them perfect I should say.

Mr. Murphy:

Q. Mr. Healy has testified, Mr. Inwood, something with reference to your telling him that there had been a collision on the Lake Shore Road, and that some injuries to the Rosback machines had resulted therefrom. Will

1748 you please state the facts with reference to any conversation you had with Mr. Healy on the subject of the injuries to those machines?

A. The statement made by Mr. Healy, for the first time in his rebuttal testimony, that I told him that there had been a collision and that the machines had been in the collision is incorrect. I did tell him perhaps that the cars had been bumped rather hardly in switching, and the machines were injured by reason of not being properly packed.

The injuries consisted in breaking the castings of two of the legs of the box-blank machine and a loose pulley and one or two castings which were not fastened down, but the injury did not affect the working of the machine and in a few days they were in as good shape as they had ever been so far as this injury was concerned. The shafts were not sprung and the injury did no harm unless possibly to the looks of the legs of the machine.

* * * * * * *

1752 Q. Mr. Healy has testified on rebuttal that he lost confidence in the Rosback machines about the latter part of June, 1904. Will you kindly state whether any efforts were made by you or your colleagues to put those

machines in working order subsequent to June, 1904, and if so, what efforts were made by you?

A. Work was continued of trying to make the Rosback machines work up until October, and Mr. Healy was kept advised as to our efforts in this line, and he even wrote us after he had left the city on October 8th, referring to how we were progressing and how the stitchers which were to be adapted to the machine by the St. Joe Iron Works were working.

1756 We kept Mr. Healy fully informed as to the inventions we were making, and every step of our [fol. 781] progress. I think as early as the 12th of March I explained to him the idea of a former, and exhibited it to him, that is, drawings from time to time that I was making of a former, and Mr. Healy, as he testifies, saw the crude former made by Mr. Lavenberg and experimented with in the factory, and we explained to him the making of the step-miter machine, its uses and purposes and our progress in its construction. We also explained to him the construction of an end stapling machine to take the place of the nailing machine, and went with him to St. Joe to order it, and explained to Mr. Brown in ordering it how the machine was to be constructed, and kept him informed generally as to the inventions we were making.

We gave him no information regarding the traveling head machine, as that was not invented until after he left, but all the other inventions I think we told him of either at the time they were planned or shortly after.

* * * * * * *

1760 The photograph handed me is a photograph of a step-miter machine built by the Saranac Machine Company. It is a machine for step-mitering the ends of the cleats before they are attached to the box blanks.

This machine is built by the Saranac Machine Company with the assistance of suggestions by Mr. Lavenberg. The machine is a practically finished machine of which Complainant's Exhibit 132 is a rough sketch, with the exception that the work in Exhibit No. 132 passed under the saw, while in the machine built by the Saranac Company the work passed over the saw differently from the manner in which it would do both in Exhibit 132 and Exhibit 172.

This machine was built by the Saranac Company, and standing on the floor of its shop at the time Mr. Wier and Mr. Lavenberg were in St. Joe on the 10th of October; if not in actual working order, it was sufficiently constructed to show what the machine would do when finished.

1768 K-1 and K-2 are models of the non-adjustable workholder or former built and invented by Mr. Lavenberg and myself.—built by Mr. Lavenberg and invented by Mr. Lavenberg and myself.

* * * * * * *

1770 Will you kindly explain how a former of which K 1 and K 2 are models, was used?

A. The first use of the formers of which K 1 and K 2 are models, was to place the cleats K 3 in the formers K 1 and K 2 as Mr. Healy has testified, and then to place over the former K 2, with their cleat segments therein, sheets [fol. 782] of veneer which had been scored by hand, placing the sheets so that the scored portion would come where the corner of the box would be, and if was attempted to feed the formers and cleats and veneer through the machine, and thus save the work of the Rosback step-miter machine. This experiment failed for the reason that the work could not be conveyed through the machine accurately enough to bring the scored portions in the proper place.

It was next attempted to use the formers and the cleat sections K 3 as described, placing each of the formers in the machine as Mr. Rosback had previously done with the long cleats and operate thereafter just as Mr. Rosback had done, relying upon the accuracy of the step-miter machine to score the veneer in the proper place to fold and make round cornered boxes as had previously been done.

This experiment failed for the reason that the step-miter machine could not be operated accurately enough to make the scored portion in the proper place.

The next experiment was the one which Mr. Healy has described in part, and in this experiment it was first necessary to use an additional or supplemental workholder or former which would hold one cleat section similar to K 3 in position on the bench so that the operator could lay the veneer section which was frequently of two pieces on the cleat K 3, and with brads nail the veneer to the cleat sec-

tions. The cleat section was then turned around and the veneer was nailed to another cleat section similar to K 3 which had been placed in this workholder on the bench, and when the four sections comprising the box blank had thus been constructed on the bench they were placed in their proper positions in the formers K 1 and K 2 and were again stapled by brads to these formers, wooden formers K 1 and K 2, this part of the detail of the operation being omitted by Mr. Healy.

The formers and their contents thus stapled together were conveyed through the Rosback machine in the
1771 usual manner, and the staples passing through the cleats passed into the wood former and after the former and its blank was delivered from the machine the blank and the former were pried apart, the blank was taken to the table, turned over and each of the staples were clinched by hand, clinching one leg or staple at a time so that the two legs would cross and thus form the clinch.

The operation of making a box blank by the process described by Mr. Healy would consume in the neighborhood of from twenty minutes to half an hour, as near as I can [fol. 783] remember. It was a long time, however, much longer than it could be made by hand.

The formers K 1 and K 2 were the only formers operated on the Rosback machines for the reason that we could devise no other former or style of former which could be utilized.

The former K 1 and K 2, or the original of which K 1 and K 2 are models, was the former which was taken to St. Joe as one of the models and the former K 1 and K 2 could not be used with any side portion or spring to hold the cleats in their position, as the formers and cleats in the Rosback machine had to be moved along longitudinally in the guides, which were a part of the machine, and to properly hold the cleats in a former constructed like K 1 and K 2 it is necessary to have such side portions to operate commercially, and it became necessary to devise a new kind of machine which could operate with such construction of formers if they were to be used as they could not be operated on the Rosback machine.

1772 Q. Will you kindly state whether the original former or a model of the original former of which K 1 and K 2 are also models is the model which was sent to St.

Joe for the purpose of making the formers that Mr. Brown constructed for you?

A. The former of which K 1 and K 2 are models was a part of the models I referred to in my testimony in chief as having been taken to Brown to show him how the formers for the machine which he was building under my former was to be constructed.

Q. Now, if any experiments were made by either yourself or Mr. Lavenberg with the non-adjustable former on the Rosback machine, will you kindly state the nature of such experiments and the purpose thereof?

A. I have described pretty clearly all the experiments made with the formers K 1 and K 2 on the Rosback machine, and these experiments with the models K 1 and K 2 constituted all the experiments that were made with the non-adjustable formers on the Rosback machine.

The purpose of the experiments was at first to use the former K 1 and K 2 so that the step-miter machine invented by Rosback could be dispensed with, but during the series of experiments and when we learned that the round cornered box was not acceptable to the trade, and we had ascertained that a lapped cornered box would be more commercial and acceptable, we used the former K 1 and K 2 in an endeavor to use a box blank which would lap at the corners and form a lapped cornered box.

The Rosback machine at this stage of the experiments, [fol. 784] which is the beginning of the one described by Mr. Healy, was clearly not adapted to make such lapped cornered boxes commercially, as no other former other than K 1 and K 2 could be devised by us to do the work, and the machine was used, not for the purpose of inventing a former to be used with the Rosback machine, but rather to save some labor in making them by hand as the machine would drive three or four staples at a time.

* * * * * * *

1773 Q. Mr. Healy yesterday testified that there were guides on the Brown machine, and that it was operated without guides, referring to the workholder or former. Will you kindly state what is the fact as to the impossibility of operating such a machine without guides on the sides?

A. The machine cannot be operated without guides and I know this to be true for the reason that we have a claim in a patent allowed on a machine similar to the Brown machine, except that it has no guides, and the drawings which were submitted to Mr. Dalton and upon which he based his opinion was a machine without guides, and the construction of the machine was such that the only movement imparted to the former in feeding through was given by a roller extending across the machine, shaped like, a little like a bread roller except that on its surface it had raised parts and depressions extending the length of the roller, corresponding somewhat to the gear-wheel on the Brown machine, so that there was no necessity of the use of a guide, as the roller would engage the former at whatever part of the machine or table the former was placed and the angle iron spoken of by Mr. Healy were entirely missing. The table was perfectly smooth, containing nothing in any way to act as a guide to the former. In the construction of the upper part of the machine mechanism was employed which would place the staples in their proper position on the blank.

. . . . . .

Cross-examination.

1780 By Mr. Healy:

. . . . . .

1830 The Brown machine was not operated without any guides since it came to the South Bend Healy Box Company. It always has guides for the former or workholder to guide it through the machine. I can explain how that machine could be operated without guides. It could in this way by using a feed roller in the place of the gear employed in the Brown machine, this feed roller ex- [fol. 785] tending across the machine from one side frame to the other, and adapted to engage the former at whatever position the former would enter the machine, and pulling it through the machine and by the employment of mechanism in the upper part of the machine to correctly place the staples in the place where they should fall. It could also be done by an apparatus attached to the upper part of the machine which would move the former laterally just

prior to the driving of the staples so that the edge of the former would keep a certain position or occupy a certain position in relation to the staple-forming and driving mechanism. It could also be done by connecting the formers in a series or by making an endless chain arrangement of the formers, which would be fed through the machine by sprocket-wheels at the end of the machine and which would require no guide. It could also be done by leaving the blank stationary and entirely without guides and moving the stitching mechanism over the blank so that the staples would be driven where desired. All of these plans, I believe, would not require guides.

Q. Can the Brown machine be now used by leaving the blank stationary and passing the stapler over it?

A. No, sir, it cannot.

Q. I am asking you about the Brown machine.

A. The Brown machine has guides. You asked how it could be made without guides.

1831 Q. I asked you the question to tell how the Brown machine can be operated without guides, that is the question, this present Brown machine?

A. Then all my reply except the last one would fit to the Brown machine.

Q. Then you would have to alter the mechanism of the Brown machine in order to operate it without guides?

A. No, sir. You would have to alter the construction of the machine in order to move the staple driver over the blank while the blank remained stationary.

Q. Now, my question relates entirely to the Brown machine and no other machine. The former or workholder holder in the Brown machine goes through with an intermittent motion, jerky motion?

A. Yes, it does.

Q. Is not that liable to jar the former, to make it vary from a direct line if it has not guides?

A. If it is fed through in the way the former was in the Brown machine as it existed at that time that would be true.

Q. So that it could not be used at that time unless it had guides and was not used without guides?

[fol. 786] A. It was not used on the Brown machine without guides.

* * * * * * *

2. From the record in the District Court of the United States for the Northern District of Illinois, in equity No. 174, Wirebound Patents Company et al. v. Chicago Mill & Lumber Company

(a) The deposition of John L. Clough, on plaintiffs' rebuttal, is offered in evidence, as follows:

DEPOSITION OF JOHN L. CLOUGH

JOHN L. CLOUGH testified on behalf of plaintiffs, in rebuttal, as follows:

Direct examination.

By Mr. Janney:

I am fifty-three years of age, reside at Indianapolis, Indiana, and am an advertising agent by occupation. Have been in the advertising business about ten years. I was president of the Indianapolis Wirebound Box Company from the time it was organized in 1904 until shortly before I severed all relations with the company in 1912. I was one of the two principal organizers of the Indianapolis Wirebound Box Company. I severed my connection with the Indianapolis Wirebound Box Company in 1912 for the reason that an increase in the capital stock of the company was insisted upon by one of the stockholders who was also a principal creditor. Under the conditions of this increase in capital stock he became the principal stockholder, he owned the majority of the stock, and I withdrew on that account. I have never felt that I had been fairly treated by the company in this rearrangement which resulted in my withdrawing.

I have no interest, financial or otherwise, in the Wirebounds Patents Company, the Wirebounds Corporation or the Chicago Mill & Lumber Company, the three parties to this suit, nor have I any interest, financial or otherwise in the subject-matter or outcome of this suit. My recollection is that I first became acquainted with the general type of wirebound boxes in 1901 or 1902, at which time Mr. Ellsworth E. Flora, of Chicago, a lifetime friend, wrote me in Indianapolis that he was doing some work on a wirebound box machine and suggested that I come to Chicago and talk

with Mr. Healy, for whom he was doing the work, and arrange if possible to organize a company for the manufacture [fol. 787] of these boxes, and I did this, but I am not positive as to the exact date of my first acquaintance. When I came to Chicago in 1901 or 1902, I met Mr. Flora, who introduced me to Mr. William P. Healy, and between us we went to a shop where Mr. Healy had a small set of demonstrating machines set up, and Mr. Healy made several boxes in my presence and gave them to me. This small set of machines consisted of a machine, I believe, they called a box-blank machine, which stitched a wire and cleats onto a long strip of veneer. Then there was a gang saw which step-mitered the cleat and scored the veneer so that it could be folded; and there was an ordinary nailing machine with which the heads were nailed into the box. As I recollect, the box which these machines were adapted to make, was about a foot long and about five inches square on the end. The cleat material that I saw treated in the box-blank machine was a very light strip compared with the cleat that is now used, and it was all nicely dressed material and the veneer was also selected, the stock I think had been probably sandpapered; it was nicely finished. As I recollect, the pieces of cleat material were the full length of the blank as a whole when the parts were treated in this box-blank machine; they were certainly as long as the material, and possibly a little bit longer, and were trimmed in the second operation. When the parts had been wired on these box-blank machines and before they were treated upon what would be called the gang saw machine, they did not constitute a foldable blank.

The box ultimately made by the use of all three of these machines in the sample set referred to was essentially only a small model; it was not a practical, commercial box. In our factory in Indianapolis I am sure we never made as small a box as this, but the box made a fairly attractive appearance except where it was folded at the corners, where there was more or less buckling or splintering, and a rounded effect rather than a square corner where it was scored.

The product of the box-blank machine referred to, before that product had been treated upon the gang saw machine, seems to be the same as the parts shown in Figs. 35, 36 and 37 of Rosback patent 608,796; it resembles it. As far as I

can tell, it is the same thing. I do not understand what this line is across here. (Witness indicates dot and dash line 37, 37.) Disregarding the dot and dash line indicated, I understand the dotted lines extending transversely of [fol. 788] the blank shown in Fig. 35 to indicate the points where the blank was scored and the cleats mitered. This scoring extended into the body of the side material of the blank but a very short distance. I discussed this matter with Mr. Healy and he explained that it would be impossible to cut through on account of the danger of fouling the saws on the wires on the other side; it was a little more than a light score.

With a view to interesting capital in the manufacture of these boxes that I have described, I returned to Indianapolis with a rather indefinite proposition from Mr. Healy and interviewed several persons in an attempt to interest them in the organiation of a manufacturing plant in Indianapolis, and succeeded in interesting Mr. Will Haugh of Indianapolis in the enterprise. Through arrangements with Mr. Haugh, Mr. Healy came to Indianapolis to talk with him, and Mr. Haugh met him at the English Hotel in Indianapolis early in the morning, before I had seen Healy; I joined them at the hotel and we talked matters over. My interest, if I started the box-making business in Indianapolis, was to be a fifty-fifty split between Haugh and myself. Nothing came of my interview with Mr. Haugh and Mr. Healy, due to the fact that Mr. Healy took what both Mr. Haugh and I felt to be an impossible position, regarding the machine; he wanted us to put up a deposit, I think it was five thousand dollars, before the machines were in existence, and he would then have the machines made and delivered to us, but without any guaranty whatever as to their being of commercial practical value. He went out of his way to explain that he was not a mechanic, but was a lawyer; that he had spent considerable money in the development of the business and that anybody who associated himself with him would have to take his chances just as he did. In my interview with Mr. Healy and Mr. Haugh in Indianapolis, we discussed and had in mind the same style of box which I had seen made by Mr. Healy on the small set of machines in Chicago; in fact, that was the only box that was known at that time. With a view to promoting the business of making this scored type of box, I kept in touch with Mr. Healy and Mr. Flora con-

tinuously from that time on, in the hope that Mr. Healy would recede from his position regarding his giving the guaranty on the machines. To my knowledge, Mr. Healy or Mr. Flora never made any of these boxes of the scored type on a commercial scale. Mr. Healy never established a going manufacturing concern for making and selling this scored type of box.

To indicate what led to my organization of the Indian- [fol. 789] apolis Wirebound Box Company, and giving dates, along in the fall of 1904 I was advised that Mr. S. M. Robinson of South Bend and some other South Bend gentlemen associated with him had succeeded in obtaining a license or contract from Mr. Healy which enabled them to make sublicense contracts. Immediately following that I went to South Bend and met Mr. Robinson and entered into an agreement for a license which was afterwards issued. When I went to South Bend, I saw box-making operations. The box which I saw made there at that time in the fall of 1904 was practically the same box that is being made now, a lap-cornered box. The cleat material used in making that box was just ordinary material. The cleats were cut in proper length to correspond with the sides and tops and bottoms before they were put into the machine; they were not mitered after they had been stitched to the blank. The miter on these cleats was what we called the step-miter. The construction of the boxes I have just referred to as manufactured in my presence at South Bend in the fall of 1904 was the same as the construction of the box shown in "Complainants' Exhibit 11b". These boxes were made by machinery. To briefly describe the machine in use in making these boxes in South Bend in the fall of 1904, it was a stationary head machine. The cleats were first placed in the formers and the material for the sides, tops and bottoms was then placed on top and the whole shook was fed into the machine and advanced and stitched or stapled as it went through the machine. The side material which was placed on the cleats when they had been located in the form on this machine was veneer. It was rotary cut veneer sawed to the proper depth of the box; sometimes in one sheet and sometimes in more, but the depth of the box corresponded with the width of this side material. The length of the box inside was the same as the length of the material after

allowing for the thickness of the cleat and the thickness of the end which came off. It was altogether a matter of convenience as to whether it was one or more sheets. It was assembled in such a way that one piece or more than one piece assembled together would make a strip sufficiently wide to make up the side. The material used for all the sides, tops and bottoms in these machines was not a single sheet; there was always a break at the corners. To describe the relationship between the edges of the sheets and the ends of their corresponding cleats, as the cleats, and side, tops and bottoms were assembled in the formers on these machines, the side sheet was exactly as wide as the [fol. 790] box was deep. The top and bottom overlapped the side, but I cannot tell, without referring to an actual box, whether the cleats were shorter than the side material or the same length. There was a certain relationship there which I do not exactly recall. It was uniform in the boxes and is now, but I have forgotten whether the cleat, the upper cleat, projected over the side cleat or whether it was flush with the end of the side cleat. Considering the matter with reference to the finished box, the top and bottom sheets overlapped the side sheets and were flush with the outside edge of the sides.

The agreement for a license and the license pursuant thereto which I negotiated in South Bend in the fall of 1904, were in writing, and I produce the original signed copies. I affixed the signature of John L. Clough appearing thereon. The agreement for the license was signed in my presence by the several parties named therein. The license agreement which I have produced was signed by the officers of the National Wirebound Box Company in my presence; in other words, by S. M. Robinson, president, and P. C. Lavenberg; and the seal of that company was affixed thereto. This license agreement was signed by myself on behalf of the Indianapolis Wirebound Box Company, and I affixed the company's seal. I was in South Bend at the time the papers were signed. At the time of signing the license agreement (not the agreement for the license), I was president and secretary of the Indianapolis Wirebound Box Company. The Indianapolis Wirebound Box Company is still operating under this license agreement. Between the signing of this license agreement and the time I severed

my connection with the Indianapolis Wirebound Box Company in 1912, that company operated under this license agreement which I have produced. The dates of these two instruments, Exhibits Nos. 53 and 54, as written in them, correspond to my recollection of the dates on which they were signed. Following the signing of this license agreement, we organized the Indianapolis Wirebound Box Company and proceeded to get ready for business, went out and took a few orders, prior to the time that the machines arrived and were set up in Indianapolis.

Q. 51. Returning to the time of your visit to South Bend in response to the information that Mr. Robinson and others had a license from Mr. Healy, and at which time you saw boxes like Complainants' Exhibit 11*b* being manufactured upon a machine which you have described in general terms [fol. 791] —please look at Figs. 1, 2 and 3 of the Inwood & Lavenberg patent No. 1,128,145 and state how the machine there shown compares with the machine which you saw in South Bend in the fall of 1904, on the occasion just referred to.

A. It appears to be the same machine. I would not care to state definitely that it is exactly the same in all details, but in appearance and in method of operating it seems to be just the same machine.

After my visit to South Bend in the fall of 1904, I went there again frequently at intervals for, I should say, five or six years; at intervals of greater or less length. During that period of five or six years, on those occasions, they were making boxes right along on the same machine.

Our company, the Indianapolis Wirebound Box Company, obtained box-making machines from the licensor, the National Wirebound Box Company, and as I recall the first machine received from the National Wirebound Box Company was installed in the plant of the Indianapolis Wirebound Box Company in the spring of 1905. Describing the general character of this machine, the machine which they sent was different from the machine in use in South Bend in one essential respect, and that was, it had a traveling head, while the South Bend machine had a stationary head. The head is the stapling mechanism in which the staples are made and driven. The head which carried the wires, formed the staples, moved forward by steps and at

each step drove a series of staples, three or four, according to the number of wires on the box; that traveled the length for which it was set and then the motion was reversed and the head moved backward and carried with it the formers and the box-blank. The formers were removed from the machine and emptied and carried to the other end of the machine for reloading and this operation was continued.

To describe the principal mechanical elements embodied in these formers, there was a pair of steel rails with a U-shaped cross-section deep enough to admit the cleat; and the box material—the veneer—was laid on top of these cleats, and then the stapling was done. The cleat material treated on this machine was not the long cleat strip previously referred to, but the cleats were mitered and cut into lengths to correspond with the width and depth of the box before they were put into these formers. For relatively locating the ends of two cleats in line, a metal block was fastened rigidly onto these formers, which spaced the cleats, and also the box material automatically after they [fol. 792] had closed up the set.

The Indianapolis Wirebound Box Company manufactured boxes on this traveling head machine which was installed in that company's plant in the spring of 1905. They have operated the machine on a commercial scale and sold the product. The boxes made on that machine were the same in construction as the box shown in complainants' Exhibit 11*b*. Upon the installation of this machine in the spring of 1905, we sold the boxes before they were made, because they were always made to order. We began immediately after the installation of the machine to manufacture and sell them on a commercial basis. To illustrate the box construction in obtaining orders before the machine was installed, the South Bend people furnished us with probably half a dozen selling samples. The construction of those samples was the same as the construction of the box in Complainants' Exhibit 11*b*. At the outset of the business of the Indianapolis Wirebound Box Company, we encountered difficulties in manufacturing or selling the boxes. The main difficulty was with the stitcher—I mean the stapling heads. These difficulties were rather serious. The stapling mechanism was exceedingly complicated and intricate and required constant adjustment and repairing; it oc-

casioned us a great deal of trouble. It reduced our output very materially. We encountered no trouble with the product itself, if we could make it. We did not deliver any boxes that were not properly made. I should say that our troubles with the machines continued for three or four years. The South Bend company, recognizing the defects in the machine which had been furnished us, agreed to make us up another type of machine, which they did. The second machine was a traveling head machine but it was made on a somewhat different principle. The staplers were mechanically more perfect and this machine, instead of having these removable formers, had a wrought steel endless chain which carried the cleats through the machine and returned underneath the bed of the machine. We also encountered difficulties with this chain fitted machine. The main difficulty was that the chains were not properly made and there was quite a heavy strain on them; they frequently broke at the link and had to be repaired. I should say that the Indianapolis company's use of the two types of machine, the traveling head with the separate formers and the traveling head with the chain feed, covered a period of four or five years. During that entire period, our difficulties with the machines continued except that the difficulties gradually [fol. 793] decreased, owing to the fact that we understood the machines better and the company was constantly making alterations and improvements in both the stapler and other mechanism of the machine. During that period of four or five years, we encountered no defects whatever in the boxes themselves. For the first few years, but certainly during that period of four or five years, we at no time were able to manufacture as many boxes as we could have sold. I have referred to the records of the company and have here a statement of the gross sales by months of boxes manufactured by the Indianapolis Wirebound Box Company from July, 1905, to December, 1906, inclusive.

July, 1905, $151.09.
August, 1905, $293.24.
September, 1905, $240.56.
October, 1905, $301.91.
November, 1905, $519.38.
December, 1905, $763.93.

January, 1906, $623.90.
February, 1906, $590.68.
March, 1906, $430.80.
April, 1906, $484.14.
May, 1906, $591.78.
June, 1906, $500.91.
July, 1906, $745.23.
August, 1906, $753.32.
September, 1906, $564.09.
October, 1906, $803.18.
November, 1906, $1,255.46.
December, 1906, $1,626.24.

Since December, 1906, the last month included in the list above, the business of the Indianapolis Wirebound Box Company has steadily increased, with certain fluctuations due to the season or local conditions, up to the time I severed my connection with the company. At that time, my recollection is that we were doing an average business of about four thousand dollars a month.

From the outset of the Indianapolis company's business in the spring of 1905, up to the time I left the company in 1912, there was no change in the construction of the boxes made. During all that period they were the same as shown in Complainants' Exhibit 11b. All of the boxes so made had the overlap relation of the tops, bottoms and sides as illustrated in Complainants' Exhibit 11b during the period stated. The wire on the boxes simply passed up over the side and turned the corner on the top and bottom material. Referring to the extreme corner line of the top, for ex- [fol. 794] ample, where the top overlaps the side, we always aimed to have sufficient tension so that when the box was folded the wire would sink into the corner of the wood, which in this case would be the top and the bottom pieces. We always produced that cutting of the wire into the box blank. We considered this cutting in of the wires at the corners of the boxes very necessary because any looseness at the corners would do away with the rigidity of the box when it was closed. With reference to the comparative merits of the lap corner type box illustrated in Complainants' Exhibit 11b and the scored blank type of box which I saw at my interview with Mr. Healy and Mr. Flora in

1901 or 1902, I made a study of the two forms of construction, I might say, more from a theoretical than from a practical standpoint, because we never actually manufactured any of the scored type of boxes, but samples which Mr. Healy gave me while they were made out of selected material were, in our opinion, open to the objection that the fold could not be made in a commercial way, chiefly because the material was not straight grained. It was always more or less diagonal and when the fold was made it had a tendency to split and splinter at the corners, and also to make a round, uneven corner and not a strictly rectangular and attractive looking package. We made comparisons of the practicability of manufacture of these two boxes. We found after we began buying veneer that it was impossible to get veneer that would lie flat; it would warp even after it was put in a machine and held down by whatever clamps we had, and consequently the scoring could not be done uniformly; it would cut clear through, at least we feared it would cut clear through into the wires in some cases and would not score at all in other places. I consider the splintering at the corners a fatal weakness from a commercial standpoint because the shippers would object to handling the boxes, it would be dangerous. It was dangerous because of getting the splinters into the hands of the freight handlers and the other employees who had occasion to use the boxes. Besides that, the great difficulty with veneer is to keep it from splitting, even after it is made properly, and a crack which is started at the corner would be liable to follow clear across the box. If the wood was very cross grained the crack might extend half way across the side of the top of the box and leave a bad opening after it once started at the corner. The license agreement between the National Wirebound Box Company and our Indianapolis Wirebound Box Company provided for the payment by our [fol. 795] company to the National Company of seventeen hundred dollars, and that sum was paid.

The Indianapolis Wirebound Box Company persisted in the business of making these boxes in the face of the continuous difficulty with the machine because we knew the boxes could be sold at a profit if they could be manufactured in a commercial way, and we were quite sure there

was money in the business. When I made my first visit to South Bend in the fall of 1904 and there saw operating a machine such as shown in the drawings of the Inwood & Lavenberg patent No. 1,128,145, I also saw a blank machine for making the scored type of blank that was not in operation. I think they called that machine the Rosback machine. It was off in a corner, simply not much more than a mass of junk; they told me that was the Rosback machine but they were not using it. That Rosback machine was a larger machine than the miniature blank machine which I saw with Mr. Healy in 1901 or 1902.

Q. 102. I call your attention to the fact that theoretically a blank such as that embodied in the box, Complainants' Exhibit 11b, can be folded in any one of three ways, either with the top and bottom overlapping the sides as shown in the Exhibit 11b; or with the sides overlapping the tops and bottoms; or with what has been called the "follow around" overlap, in which each sheet at one edge overlaps another sheet and at its other edge is overlapped by another. To what extent in the business of the Indianapolis Wirebound Box Company did you utilize this capacity for folding in any one of the three ways?

A. I never knew that it could be done until you called my attention to it, and certainly it has never been done in our factory. We always made them with the top and bottom overlapping; we never used the other two methods of folding.

Q. 103. If you cut your end pieces for your box with the proper dimensions to suit the overlapping of the sides of the tops and bottoms, would these dimensions of the end pieces have any influence upon the way in which the blank would be folded around the end?

A. Absolutely so. The end must be cut to fit the method by which the box is to be folded, to correspond to the method by which the box is to be folded.

In making a box with the interior end dimensions four inches by four inches, the dimensions of the end pieces would be four inches by four inches. Assuming all the side material to be quarter inch stock, to suit these dimensions the width of each of the two sides would be four [fol. 796] inches. The width of each of the top and bottom to suit the four by four dimensions of the end pieces would

be four inches, plus double the thickness of the material; if quarter inch were made, then the top and bottom would be four and a half inches in width. When this box was folded around the ends with the top and bottom overlapping the sides, the interior width of the box would be four inches and the depth would be four inches. In the box just referred to, if the sides were made to overlap the top and bottom, the interior dimensions of the box would be four and a half inches wide and three and a half inches deep. It would be impossible to fold the blank in this way about the four inch by four inch end pieces. If the blank referred to were folded with the "follow around" overlap, the interior end dimensions of the box would be four and a quarter inches wide and three and three-quarter inches deep. It would not be possible to fold the blank in this manner around the four by four end pieces and close it. It would be folded but the four inch end piece would project a quarter of an inch above the top, so that the box could not be closed.

During the six or seven years that I was president of the Indianapolis Wirebound Box Company, I never knew of an instance of the overlapping of one of our wirebound box blanks in any other manner than to produce the overlapping of the sides by the tops and bottoms.

When I made my first trip to South Bend in the fall of 1904, I saw the box-making operations on the machine similar to that of the Inwood & Lavenberg patent No. 1,128,145 at the factory of the South Bend Healy Box Company.

Q. 114. What was the character of the box-making operations that you witnessed there?

A. They first cut the cleats with the mitered corners——

Q. 115. Let me interrupt you. I do not mean to ask for the details. I mean merely, were boxes being made upon order, or were they merely exprimental, or not?

A. They were commercial boxes, they were selling them to various people in South Bend and Mishawaka. As to the extent of their operations, they led me to believe they were doing a profitable business. They were certainly manufacturing boxes in a commercial way.

Q. 117. Prior to your knowledge of these commercial operations in South Bend at the plant of the South Bend

Healy Box Corporation, in the fall of 1904, what other commercial operations had you ever heard or known of [fol. 797] in the manufacture and sale of boxes or crates bound with wire?

A. I had never heard of anything of the kind with the exception of a crate that was made by Kingan & Company at Indianapolis.

The crate that was made by Kingan & Company at Indianapolis was simply a series of slats that were made in a section and were then folded around and nailed onto solid ends and one of the slats projected over the top and was folded down on the side and nailed down on the end in closing. I would not consider it a box at all, nor was it in any respect similar to this box that the Indianapolis Company had been making.

Q. 119. In the box business as you have been acquainted with it, what has been the custom in determining the dimensions of boxes to be manufactured? In other words, to what extent are dimensions specified in orders for boxes?

A. Our cutting bill always specifies for the length of the material a sufficient amount to lap over the cleat and the end. If the cleat is three-eighths and the end one-quarter, it would make it five-eights on each end or an inch and a quarter longer than the inside length of the box. The ends are always made the exact inside depth and width of the box. The upper and lower cleats are made the exact width of the box and the vertical cleats are made one-half inch shorter than the depth of the box. The veneer for the top is always made the inside width of the box, plus double the thickness of the material used in the sides and the material for the sides always corresponds with the inside depth of the box.

Originally, while I was president of the Indianapolis Wirebound Box Company, I made out quite a number of the cutting bills which specified the proportions of stock dimensions; afterwards that was delegated to a clerk. The proportions of stock dimensions described were always specified exactly. The blanks that we used in our cutting bill gave a line for each dimension, length, width of tops and bottoms, sides and cleats, etc. I have described certain relative dimensions providing in certain cases widths of tops and bottoms, and so on, and in the business of the

Indianapolis Wirebound Company we followed this proportion exclusively. In their orders for boxes the customers gave us merely the inside dimensions. To my knowledge, we never made up a stock of boxes without reference to some particular order, specifying exact dimensions. All boxes were made on order specifying dimensions.

[fol. 798] Cross-examination.

By Mr. Hood:

X Q. 125. Mr. Clough, when were you first consulted by Mr. Janney or anyone else connected with the plaintiffs in this case, relative to the testimony which you would give?

A. Yesterday. Mr. Inwood called on me last summer in Indianapolis and we had a conversation regarding the matter and made up a little statement in writing to set out practically the same points that have been brought out here today. I have never seen that statement since then, but I was requested by Mr. Babcock on Tuesday to come to Chicago, and I then met Mr. Janney at this office for the first time, yesterday morning.

My home is in Indianapolis and I came here voluntarily. I do not know whether I am to receive reimbursement for my expenses and time or not. The matter has never been mentioned. I was in consultation with plaintiffs and plaintiffs' counsel yesterday. At that time my attention was called for the first time to the possibility of folding a blank of the character in Complainant's Exhibit No. 11b, in three different ways. I am quite certain that the box blanks which I saw in Chicago at the time of my first visit in 1901 or 1902 were of the character indicated by Figs. 35, 36 and 37 of the Rosback patent No. 608,796. The long or continuous cleats were stepmitered in the manner indicated by the dotted lines in Fig 36, and the veneer sheet was scored in the manner indicated by the dotted lines in Fig 36. On the machine I saw in the fall of 1904 in South Bend, the formers were carried through the machine beneath the stapling mechanism during the stapling operation, and the cleats and sheets were preliminarily placed in these formers and held in the desired relative position before the loaded former

was carried to the machine. I am not sure about the thickness of the sheet material in the sample boxes which Mr. Healy furnished me in 1901 or 1902, but suppose it was about ⅛"; I don't think it was heavier. I cannot say that anything was said about the sheet thickness being miniature, as well as the general size of the box. It was palpable that the whole thing was a model, because the cleats themselves were made very small. I would not suppose they were one-quarter of the bulk of the present cleats, and the wire was quite light, and the whole thing was made up, as Mr. Healy explained, for the purpose of exhibiting at the Paris Eposition where he had the machines on display, and made these boxes and distributed them, I think, as souvenirs, to visitors at the exposition. Those were the [fol. 799] samples used in my negotiations with Mr. Haugh with the idea of forming a company for the manufacture of boxes of that kind on a commercial scale.

I should say that in this ⅛" material the scoring did not go over one-third of the distance through, just a very little distance. Mr. Healy explained it was impossible to get it in very far on account of the danger of taking the edge off of the saws in coming in contact with the wires.

X Q. 140. Were any of these samples split along the corners of the boxes?

A. Yes, the ones he gave me were, not very materially but they were split wherever the material was cross grained, where it was not perfectly parallel to the length of the box they were split.

These samples were bound with wire and the wires at the ends projected so that the ends could be twisted together to fasten the box. At the front corner of the box the top sheet overlapped the front sheet.

X Q. 144. Did you ever see any boxes which you considered to be full sized made like these small samples by scoring the under side of the sheet?

A. I saw two or three large boxes which Mr. Healy had used in shipping his machinery to Paris. It was made on the same principle, but I believe that those machines, I believe he told me they had been made by hand.

X Q. 145. Were those large boxes made of sheet material that was continuous?

A. No.

X Q. 146. The sheets were separated at the corners of the boxes, were they?

A. No, I think not. I am not sure about that. The corners were made badly, scuffed and broken; the boxes had been shipped to Paris and returned.

X Q. 147. They were open from end to end, were they, at the corners?

A. I would not say positively about that, Mr. Hood.

X Q. 148. You are not prepared to say that they were not?

A. No, sir.

Those boxes were wirebound. So far as I recall I never saw a full-sized box made of say ¼" sheet material scored on the underface at the corners, unless those boxes were. If I examined the boxes, I do not recall whether I examined them on the feature of having been scored in the manufacture or whether they were separate sheets. Those large boxes had step-mitered cleats. I should say that in the commercial boxes manufactured by the Indianapolis Wirebound [fol. 860] Box Company during my connection with it, that the sheets overlapped equally as well as in Complainants' Exhibit 11b, if not better. In that company's manufacture of boxes each sheet of each section of the box projected at its edges beyond both ends of each cleat. It never occurred to me nor anybody else connected with that company that there could be any other arrangement of the sheets and cleats. Up to the time I severed my connection with the company and during a period of about seven years, the company always used step-mitered cleats. Occasionally the sheet material used in the boxes split where the staples were driven in. That was considered as an injury to the box. It it was a broad split, the box would be rejected. I might say that we had very little trouble, Mr. Hood, with the sheets splitting when the staples were driven. Occasionally the material would not be properly seasoned and the shrinking would cause it to split when the wood drew away from the staples. We had no trouble with it splitting in the manufacture. In the commercial production of the boxes by the Indianapolis Wirebound Box Company the blanks were overlapped with the sides at right angles to the bottom and the ends were then inserted into position.

X Q. 161. There never was any folding of the blank around the ends, was there?

A. Oh, the boxes were bent up and the end was then inserted before it was folded and then the box was closed tight on the end; when it was put in the end-stapling machine the folding was begun before the end was inserted but was not completed because you could not get the end in if it was folded as well as you could if it was partly spread.

At its organization, the capital stock of the Indianapolis Wirebound Box Company was $5,000. Of this amount we paid $1,700 for a set of machines, including a box-blank machine, a step-miter machine and an end-stapling machine. The company continued to operate with this capitalization until I withdrew in 1912. The capitalization was increased in 1912 because we had too large a business to run on $5,000 capital. We had a much larger investment than was represented by $5,000. At that time the company was heavily in debt to the stockholders. I presume we owed $10,000, around that figure. I was a stockholder during all that period and my stock holding represented money invested. I did not pay par for my stock. I think there was $3,800 paid in, of which I paid my proportion. I owned 30% at that time. During several years of the early period of the [fol. 801] operations of the company, the failure of the machines to operate efficiently interfered to some extent with the total amount of our output.

X Q. 176. You were asked in your direct examination relative to dimensions of certain parts of the box to be made four inches square inside and of the character of Complainants' Exhibit No. 11b. Now, in the supposed box, what would be the longest dimension of the cleats attached to the side sheets?

A. A four-inch box?

X Q. 177. Yes.

A. It would be four inches, attached to the side sheets. I beg pardon. They would be three and one-half inches.

Redirect examination.

By Mr. Janney:

The actual paid in capital of the Indianapolis Wirebound Box Company was $3,800. Referring to the list already

produced showing gross sales month by month on that capital, we were able to do in the first six months of business approximately $2,270 worth of business, which is correct according to my recollection. During the second year of our business, in 1906, no further capital was paid in, but during that year we were able to do a gross business of $8,969 approximately. Although between the years 1901 and 1904 Mr. Healy and his associates were unable to sell any of the scored type of box in the first 18 months of business of the Indianapolis Company, that company had gross sales amounting to $11,259 worth of the new lap cornered box on a paid in capital of only $3,800.

Mr. A. R. Baxter, who appears as my associate in the agreement for license, remained in the company only about three months, and he became discouraged due to the difficulty in manufacturing the boxes, and withdrew, giving Mr. Branhan and myself an option upon his stock in the company at what he had paid for it, which option we took up.

The main difficulty in manufacturing the box was with the stapling mechanism, which made it necessary to cobble, as we called it, the boxes by hand, many of them, after the machines had gotten through, because the staples were not properly driven, the stapling mechanism would not work. So far as I know, Mr. Baxter found no fault with the box itself, which was the product of these machines.

R. D. Q. 186. Please refer to Fig. 36 of the Rosback patent No. 608,796, concerning which you were questioned on [fol. 802] cross-examination. How deep into the inner surface of the side material do you understand the scorings extended shown in this figure?

A. The scoring was not uniform, but I should say it would average about not over a sixty-fourth of an inch on one-eighth material, or possibly greater than that, not over one-third of the way through the material.

R. D. Q. 187. Do you, or do you not, understand this Rosback Fig. 36 to represent a scoring of that proportion to the thickness of the sheet which you have referred to?

A. No, sir; the scoring is shown here as extending practically through to the middle.

I never saw any scoring like that. In fact, Mr. Healy explained it was not practical to score through to that depth

on account of the danger of coming in contact with the wires.

Recross-examination.

By Mr. Hood:

I don't think I could say how much money was loaned to the company by the stockholders during the first eighteen months of operations of the Indianapolis Wire-bound Box Company. It was a comparatively small amount. We bought material on credit, to a certain extent, and were able in that way to finance the business without the necessity of actually borrowing money. At the end of eighteen months we owed some money for material, etc.

R. X Q. 191. So that your business was done, not only on the comparatively small amount of capital paid in, but on your credit with the dealers from whom you obtained material, etc.?

A. Yes, except we had an incorporated company and our individual credit was not worth anything in an incorporated company.

I do not think the operations during the first eighteen months resulted in a profit; probably in a loss. I have not the exact record.

[fol. 803] (b) The deposition of Charles E. Russ, on plaintiffs' rebuttal case, is offered in evidence, as follows:

Deposition of Charles E. Russ

Charles E. Russ, witness on behalf of plaintiffs, testified:

Direct examination.

By Mr. Janney:

Live in South Bend, Ind.; 49 years of age; manufacturer of grocers' sundries. Am not interested financially or otherwise in plaintiffs or defendant or the subject-matter or outcome of this suit. Have lived in South Bend 29 years. First became associated with the South Bend Healy Box Company some time early summer or middle summer of 1904, at South Bend. The first time I went to

their plant they were located in part of the old Miller-Knoblock Wagon Company's plant. At that time the plant was not in operation; they had some machinery installed. As I remember it, there was some machinery there that had been set up, I am not sure about that, some materials, that is veneer, some boxes made up, some partly made up. The machines were some sort of machines for stitching boxes or making boxes. At the time of my visit to the South Bend Healy Box Company in the early or middle summer of 1904, I saw some wirebound boxes, but I did not examine the boxes the first time I went over to the plant. About the time of that visit I purchased boxes from the South Bend Healy Box Company. The boxes were a stock of boxes that they had left on hand; they were made up that we bought from them. The boxes were made of veneer, stretched out, stitched and creased or grooved in some way on the corners, sort of V-shaped creases, as I remember it, either pressed in or machined in some way.

After the veneer boxes had been creased in this way, they were folded to make a rectangular box. I purchased probably 500 or 700 of these boxes from the South Bend Healy Box Co., or it might have been 800; it was less than 1,000. We did not specify the sizes of the boxes and have them made to order. The box, as I say, was creased on the corners only partially through the veneer, but in folding up the veneer would many times—if it was cross-grained it would not fold on the corners, make a twisted corner; would not be a square corner. We did not buy the boxes with reference to certain sizes of packages that we [fol. 804] intended to pack. It was a sort of left over lot and we bought them to use for odd packing. My recollection is that we paid about fifty per cent. of the regular price for a box of that sort, but I am not certain about it; it was not more than fifty per cent. Our general idea in buying those boxes that were not particularly suited to the dimensions of the things we wanted to pack was that we always had a certain amount of packing to do where we didn't use full packages, and we figured we could use those boxes, partly filled packages and fill them up with excelsior or something of that kind. That scored type of box was not a good practical box for our general business. The trouble was that our grocery packages are altogether rectangular packages and we had to have boxes that made

a perfect rectangle, square edges, square corners. The round corners, the twisted corners, would pinch the packages, and then where they split open on the corners the dirt would get in and soil the packages. Our products were packed in individual rectangular cartons or boxes and the rectangular cartons or boxes were packed, a number of them, in a wooden box for shipment. By the statement split at the corners so as to leave an opening that dirt could get through, I mean that the grooved veneer as it broke over the corners split on the corners sometimes crosswise, sometimes being cross-grained it did not make a perfect corner. I think that happened in almost every one of the scored veneer boxes in forming them. From my experience with those scored veneer boxes we did not consider them a practical box for general use in our business, and if there had been a steady supply available, we would not have used them in our general business. The South Bend Healy Box Co. did not have a regular business in the sale of those scored veneer boxes. With reference to the character of the South Bend Healy Box Company's operations in connection with these scored veneer boxes, they told us they were experimenting with this machine.

Subsequently to the purchase of these boxes, we purchased another type from the South Bend Healy Box Corporation. That was later on in the fall of the year 1904 and the years following. Our heaviest shipments begin about September first and run from September first to November fifteenth or the first of December. We made this second purchase of the other type of box at the beginning of our busy season, about the first of September, in 1904. The box that we purchased from the South Bend Healy Corporation in September, 1904, was a rectangular [fol. 805] box made of veneer. The ends were step-mitered with a narrow cleat and when the box was folded the tops and bottoms fitted over the sides and made a complete box. The step-miters drew it down so that there was some tension on the wires and made a complete tight box. The construction (without regard to size) was the same box as shown in Complainants' Exhibit 11½. We bought in the neighborhood of 20,000 of those boxes in the fall of 1904 and that winter, and we continued to use them for several years, five or six years. We were using a number of different sizes, but of the one particular thing I referred to,

used them in the neighborhood of sixteen to twenty thousand a season, might have been twenty-eight thousand of the various sizes. We are not now using these boxes and happened to stop using them because the South Bend Healy Box Corporation went out of business; got into some financial mix-up and quit the business. Those boxes which were like Complainants' Exhibit 11*b*, were a satisfactory box. I think the price was practically the same as we had been paying for the ordinary nailed box that we had used. We bought the shooks in carloads and we had to pay something for nailing them up. They furnished us the boxes set up and I think that an additional charge for setting up was part of the cost of nailing or something like that. By shooks I refer to shooks for nailed boxes. As compared with the nailed boxes which we had used the wire-bound box was lighter in weight and it made some saving in freight, quite a considerable saving on long distance shipments to the coast. In our business we were charged with the freight on our shipments.

Cross-examination.

By Mr. Hood:

There is no other Charles E. Russ living in South Bend so far as I know. Some years ago, a long time ago, there was, but I don't think there was any other Charles E. Russ living in South Bend in the years 1903, 1904 and 1905. I know Mr. S. M. Robinson of South Bend, a stockholder in the Wirebounds Corporation. I am not a personal friend of his. To describe the second lot of wire-bound boxes which we purchased from the South Bend Healy Box Company, the box was about 14½" wide. I said it was about 14½" wide. I think it was sixteen inches long, and something like 14½" deep. The box held a hundred pounds of self-rising flour; there were fifty two-pound packages in a case; that is the contents of the package and that is the dimensions of the package. What else do you want [fol. 806] in detail? The box had four step-mitered cleats at each end. Then the veneer end was nailed or riveted or stitched to the four step-mitered cleats. They first made a veneer strip that was stitched together long enough to go the entire distance around the box. It was folded and then the ends nailed or stitched in afterwards. The boxes

came to us set up, with the wires just bent around the corners. I might tell you some other little things, possibly. I remember the box when it came to us, as I stated on the other questions, the step-mitered pieces were made the exact size and made tight enough so that when they folded around it brought some tension on the box and brought the corners together. I know there was tension on the wires, because I would go out in the factory and work myself and I have closed a great many of those boxes, I have closed a good many thousand of them myself, and I know they were, because we examined the boxes; we examined each lot as they came in to know they were all right. The boxes came to us set up; each load that came was checked in and we were packing and shipping at the same time as fast as they came in. We did not fold them unless we folded the lid over as we packed and the lid was closed and sealed. I was first consulted relative to the giving of my deposition some time last year, last fall. The matter of the tensioning of the wires was not mentioned at that time. It has been mentioned to me by counsel for complainants in consulation since that time. We are using a fiber box for quite a lot of our shipments. In recent years our shipments have been broken up more, that is, I mean they are packed in small packages to reach the small merchant and we use a fiber box to hold the small amounts, and the small amounts are packed six or eight or ten or twelve in a large fiber container. Then we also use a sawed box shooks. By "sawed box shooks" I mean a nailed box. I think there are other shippers in South Bend using wirebound boxes at the present time; I am not sure about that. I think at one time I wrote a letter of recommendation relative to wirebound boxes to parties connected with either the National Wire Bound Box Company or the South Bend Healy Box Company, but I cannot remember the date. I do not think any of the wirebound boxes obtained after September, 1904, were open to any extent at the corners, along the corners. On occasions they might have been open. We undoubtedly used that sort of box along with others for receiving the same materials that we packed in the other boxes of the same lot. I think in making those boxes they used different materials; I think at one time they used some yellow pine veneer, [fol. 807] and I think they used some gum veneer; I think

the majority of them were made of gum veneer. The gum veneer is supposed to be kiln-dried. We may have got some boxes of gum veneer that did shrink; I am not sure about that. I think we used all of the 500 or 800 boxes or blanks of the first lot purchased. They were not used right away. They were strung out and just used occasionally, whenever we had odd shipments. So far as I know, the shipments reached their destination all right. I have no recollection of claims for rebates for damages to the goods shipped, and as far as I know now all goods shipped in those boxes of the first lot reached the consignees in satisfactory condition.

Redirect examination.

By Mr. Janney:

Referring to the boxes purchased from the South Bend Healy Box Company in September, 1904, the box folded together and the top and the bottom fitted over the sides. By "fitted over the sides" I mean, on account of these stepmiters on the corners locking into the corners, the wires drew down and brought the top and bottom over the corners tight. The top and bottoms, rather, were drawn down on the sides. The edges of the tops and bottoms overlapped the sides. I have not had any experience as a mechanic, nor am I generally familiar with mechanics. If a considerable proportion of those boxes bought from the South Bend Healy Box Corporation had had corners with substantial openings in them, we would not have considered them suitable for our business. We would have rejected them. Some of the scored veneer type boxes were used for odd shipments. By this I mean shipments that were not full, regular packages, and the boxes costing hardly anything, if we could pack them half full or two-thirds perhaps, then we would fill them up with excelsior.

Recross-examination.

By Mr. Hood:

R. X Q. 89. Mr. Russ, in these boxes of the second and subsequent lots which you purchased—especially those which were open at the corners—the shipments made in

those particular boxes, so far as you know, reached the consignees in satisfactory condition, did they not?

A. Well, I remember that we had quite a considerable lot of stuff that we sold to local jobbers that would be handled only once, and we sorted out those boxes, if there [fol. 808] were any, occasionally now and then a box that was defective, and they always went to the local jobber that didn't ship in carloads or for reshipment.

R. X Q. 90. Are you perfectly positive that you never made any full shipments in boxes that were not absolutely tight at the corners?

A. We may have made a few shipments.

R. X Q. 91. You are not prepared to state definitely that you did not, are you?

A. Not exactly.

R. X Q. Are you prepared to state definitely that you actually selected from these boxes all of the boxes that did not have tight corners, and only used those particular boxes in local shipments?

A. I think so. I did not handle all of these shipments, understand. I did not inspect all those boxes. I did not spend all my time in the factory.

R. X Q. 93. Was there any general order issued by you that whoever used those boxes for making shipments should select the open cornered boxes and not use them for out of town shipments?

A. I have given you a sort of a general custom that we had. We might occasionally find a piece of veneer with a knot in it or a hole in the box, or something of that kind. We were not kickers, we never had that reputation. We selected those boxes if they were for local business, as I told you. We patched them up, laid a piece of cardboard in them, or something of that kind, used them for local shipments. We may have used some for out of town shipments, particularly when they were full carloads. We used some of the first lot for out of town shipments.

(c) The deposition of Benjamin F. Masters, on plaintiffs' rebuttal, is offered in evidence, as follows:

DEPOSITION OF BENJAMIN F. MASTERS

BENJAMIN F. MASTERS, witness for plaintiffs on rebuttal, testified:

Direct examination.

By Mr. Janney:

I reside in Chicago, am a manufacturer of boxes, and am 55 years of age. I am an official of Rathborne, Hair & Ridgeway Company of Chicago, a corporation; have entire charge of the sales. I have the superintendency of [fol. 809] manufacture in certain plants but not in others, so that my time is divided between selling and manufacturing. I look after the manufacturing entirely at our Chicago mill. Our company manufacturers wirebound boxes and is a licensee of Wirebounds Corporation; has been manufacturing wirebound boxes under this license about four years. I am not interested financially or otherwise in Wirebounds Patent Company or Wirebounds Corporation, except the connection as a licensee of the latter. Became actively interested in the box making business in late 1900, previously to which time had been in the lumber business. Cannot fix the date when first heard about attempts to make wirebound boxes, but I think very shortly after I became interested in the business of manufacturing boxes I heard at different times more or less about wirebound boxes. The first operations of making wirebound boxes I ever saw was in South Bend, and as near as I can fix the date it was about 1904, in the spring. I do not know the name of the company. I went from Chicago to South Bend with Col. Henry Stephens and I saw all the box making machine equipment there was there, I think. I recall a machine that stitched the stock veneer to the cleats, and I recall a saw or set of saws that cut the cleats, that was called step-mitering; and I think I saw some saws or a saw on which the cleats were ripped and cut. I saw the machine that stitches the wire to the cleats. I saw it operating or attempting to operate, as I recall it,

it was not doing very satisfactory work that day. The box was made with two cleats, that is, a cleat at each end, the length of which was the circumference of the box when it had been completed and folded together. Describing the finished product of this stitching machine, the machine carried the stock through and attached the wires and the veneer to these two cleats at the ends and stitched or stapled the wires to the material at intervening points. It came through that machine in one continuous piece. It then went to the saws that were provided to make this step-mitering and with those saws was cut at different points where necessary to make the fold of the box. The cleat was sawed in two in order to complete the step-miter. When the parts had been operated upon by the stitching machine and before going to the step-miter saws, the blank was entirely rigid. After the blank had been operated upon by the step-miter saws, it was rigid except at the points intended for the corners of the box where it was folded, but at that they had some difficulty in their demonstrations that day in folding the box because of the veneer [fol. 810] not being inclined to fold just where they wanted it to, perhaps irregular in its grade. I recall that they explained to us the reason they were having difficulty was because of the veneer not folding as it was planned or intended it should. I had several purposes in going to South Bend with Col. Stephens. One was that I was curious to see the process of manufacturing wirebound boxes; another was that we had been requested and importuned to manufacture the boxes, and with a view of seing something of their construction and passing judgment upon their utility as a shipping container, and general information that any manufacturer wants to acquire in connection with his business, took me down there. I was not favorably impressed with the practicability of the box which I saw there, as a shipping container. I was not favorably impressed with the commercial practicability of the box itself and the manufacturing operations which I saw and had explained to me on that visit. On the contrary, I was unfavorably impressed. I did not think it was a practical proposition and for several years after that refused to be further interested in the question of wirebound boxes because of what I saw at that time. Briefly, the construction of the wirebound box which our company now manu-

factures is material attached to cleats which have a mortise and tenon and interlock at each end when the mat is folded together. By "mat" I mean the entire box, except the ends. It is the term we apply. Before the box is folded together it is called a mat. To explain the dimensions of the different parts of this mat or blank, as specified in our orders to the factory, our specifications for boxes are always based upon the inside dimensions of the package; that information, both in the office and in the factory, is the basis upon which the cutting size of the box is determined. In the manufacture of wirebound boxes, that is for the cutting, in specifying the length of the side material, we add to the inside length twice the thickness of the cleats and the material used in the ends. For the sides we cut them the exact depth of the box, inside dimensions of the box. Both the tops and bottoms in width are cut enough wider than the inside dimension to cover the sides. By "cover the sides" I mean that the top and bottom rest over each side and that if the side is quarter inch stock, which is quite generally used, the top and bottom would be a half inch wider than the inside width of the box. It would be so spaced upon the cleat that one-quarter of an inch projected on one side of the cleat and one-quarter on the other side of the cleat, so that when it was folded into [fol. 811] place the top and bottom each covered the side. Being shown Complainants' Exhibit 11a, disregarding the step-mitered construction of cleats shown in this box, this construction is what I have been trying to explain.

During the entire period in which our company has been manufacturing wirebound boxes, it has been our custom to specify the excess widths of the tops and bottoms to enable them to cover or overlap the sides, as described. And in all orders for wirebound boxes this excess width is specified. We assume this practice is observed by all our employees as far as it is possible to do so. I would say, commercially, a hundred per cent. If it ever occurs that the overlapping of the sides by the tops and bottoms is not substantially perfect, that result is not intentional. This overlapping relation of the side sheets makes a tight box, a tight corner. One of the points that is always used in marketing it. It is presented to the consumer or the shipper as a tight cornered box.

I have charge of sales for Rathborne, Hair & Ridgeway Company, and our salesmen are instructed and trained to present the feature of the overlapping relation of the side material as one of its advantages. The wire is attached to the material of which the box is constructed, and also the cleats at the ends, fastening by staples. The wire is drawn very tightly over the veneer at the corners, at each corner, every corner. If sufficient tension is provided for, it causes the wire to indent itself into the material. In our manufacture of wirebound boxes, this actual indenting of the wire into the corners of the box occurs in all boxes, to a certain extent. We think that this tensioning of the wires over the box corners and indenting into those corners is the inherent strength of the box more than anything else. Our observation has been that if the wires are not drawn tight at the corners so that the strain of the box is upon the wires when it is packed, that in shipping the staples that hold it together begin to loosen up and the box is in an imperfect condition before it is ever handled. Unless the wires are tight over the corners it is scarcely what it should be as a container. If these wires were loose and it required the contents of the package to press on the inside of the box and force it out against the wire, that would be a weakness in the box to begin with before it was packed, from our point of view. My first knowledge of anyone manufacturing this so-called lap cornered box on a commercial scale was some few years after my first visit to South Bend. I cannot fix [fol. 812] the date definitely. I think I heard it discussed at numerous and various times thereafter, but I do not think I ever felt any material interest in it as a commercial proposition until about a year prior to the time we began the manufacture of these boxes, which I would fix at some time during the summer or spring of 1910. We had competitors who were manufacturing wire-bound boxes, I believe they purported to have the overlap, I am not real positive on that point. We had a competititor here in Chicago who manufactured wirebound boxes for a period of three or four or five years before we were interested in it, rather before we were engaged in it. I think the International Wirebound Box Company, was the name of the Chicago competitor and I would approximate the date of my first knowledge of their manufacture as 1906. Between 1900 and 1906 I tried to make myself entirely familiar with

all classes of shipping containers that were on the market. We were manufacturing a great many packages, the output of two big mills, and we had competition from every direction and from every source, and I thought it necessary to be familiar with all classes of containers that were placed upon the market. Between 1900 and 1906 I should say that our gross business per month was from 50,000 to 80,000. At that time I had entire charge of the sales end of the business.

Q. 54. Between 1900 and the time when you first heard of the commercial manufacture of this lap cornered type of wirebound box, had you ever known or heard of any going commercial enterprise for the manufacture and sale of any kind of wirebound boxes? I exclude from my question crates bound in some way or other by wire.

A. As I understand the question, I would answer no.

Prior to the fall of 1904 I had never known or heard of any actual business in the manufacture and sale of wirebound boxes. We think the wirebound boxes our company has been making since 1911 are very superior to the boxes which I saw on my first visit to South Bend. They are manufactured better. They have the features that I have explained of the lap at the corners and the tension of the wires all around the box, so when it is sealed the wires are tight at all points. We also use a different cleat which we think is superior to the style of cleat we saw at that time. Under our license arrangements with Wirebounds Corporation, we pay 7½% royalty, calculated on gross sales f. o. b. our factory. We get no rebates or reductions. With reference to when the proposition of manufacturing lap cornered wirebound boxes was first submitted to me, I think [fol. 813] we might have had numerous suggestions and solicitations to take up the manufacture of wirebound boxes from the period of 1906 to 1910, but the first presentation that ever appealed to us was by Mr. Babcock, I would say about a year prior to the time we put in the machines. That was some time in the summer of 1910. When this lap cornered type of box was first explained to me by Mr. Babcock, it made a more favorable impression than any previous wirebound boxes that we had ever seen or heard of, or rather that we had ever investigated. I cannot say that at that time we were desirous of undertaking the manufacture of something like a wirebound box. We had been los-

ing some trade to the wirebound box and being solicited by Mr. Babcock to undertake the manufacture of it, we were forced into a recognition of its merits, if it had any, and more favorably considered its manufacture than at any previous time. Our negotiations continued, perhaps, for a year before we finally decided that we would undertake it. Our final decision to manufacture the lap cornered wirebound boxes was to supply the trade that we were supplying with our other boxes and which was being transferred to wirebound boxes and thereby taken away from us, to hold our business, we felt the importance of it. Previous to that time we had been making principally nailed and lock cornered boxes and we had materially felt the competition with our nailed box product by the wirebound box at that time. I do not recall any competition from wirebound boxes prior to 1905.

Our company is a member of the National Association of Box Manufacturers and I am chairman of the Board of Governors of that association. It is an organization of box manufacturers national in its scope, taking in all lines of wooden boxes, organized for educational purposes and for the purpose of defense in the protection of their interests in any way in which they may be assailed, a trade organization. Approximately 100 box manufacturers are represented in the membership.

At this time I do not think we have any members west of the Missouri River. From the Missouri River east we take in all territory. We have, in times gone by, had membership on the Pacific Coast, I do not think we have at this time.

Cross-examination.

By Mr. Hood:

The wirebound box blanks which our company manufactures are produced on special machines secured from the Wirebounds Corporation, complainants in this case, and [fol. 814] the royalty we pay is based upon the amount received for the product of these machines. I think it would be very impractical, commercially, to make by hand without the use of special machinery, wirebound box-blanks such as we produce. I would scarcely consider it commer-

cially. Our company never produced any wirebound box-blanks with step-mitered cleats.

X Q. 80. Did your company ever produce any wirebound box blanks in which the edges of the side sheets projected beyond the ends of the cleats, as well as having the edges of the top and bottom sheets projecting beyond the ends of the cleats?

A. Never did intentionally.

X Q. 81. In the commercial production of your boxes you find, do you not, that the tensioning of the wires at the corners is not always secured when the blanks are folded, although the desired expectation is that there shall be a tension?

A. It is so nearly always that we treat it commercially as a hundred per cent. proposition.

X Q. 82. You do not discard any of the blanks that do not accomplish that result as fully as you would like to have it?

A. Not a sufficient number to be significant. I do not recall of our having discarded any for that reason.

I have seen the product of the International Wirebound Box Company and they use the same size cleat that we use, approximately, say three-quarters or thirteen-sixteenths thick, or fifteen sixteenths wide. I do not recall whether they were step-mitered or mortise and tenon. I might have examined the product, but I do not recall at this time, as to that feature; they have been out of business six or seven years. I have no desire to have the competition of the Chicago Mill and Lumber Company in wirebound boxes eliminated from our field of operations, nor do I consider that advisable. I don't say I would rather have them as competitors. I would like to be entirely neutral, and I am. Our company would not profit in the least by the elimination of the competition of the Chicago Mill and Lumber Company in the wirebound box business, because we have all the business we can handle, or practically so. There is a great field for wirebound boxes. But we do not feel that their competition is harmful to us at all. We think if they were eliminated somebody else would make those boxes, might be us and might not. The Chicago Mill and Lumber Company is a member of the National Association of Box Manufacturers.

[fol. 815] X Q. 92. Some of the officers of that company prominent in the affairs of the association?

A. Yes, Mr. Yegge is a member of the Board of Governors.

Redirect examination.

By Mr. Janney:

R-D. Q. 93. You stated, Mr. Masters, that you did not remember having discarded any box blanks at your factory because the wires were such as to be too little tensioned over the box corners. If the wires were in such condition as to be entirely untensioned over the box corners in any given blank, would that blank be discarded or not?

A. Oh, yes, it would. I do not recall any being discarded for that particular reason. With us we operate our business and we base our sales of our product upon the theory that this overlap is the only protection and safety in a wirebound box. We have tried to build our business upon that principle and our salesmen, I think, present that as an argument in the offering of our boxes to the users of boxes. They enlarge upon that feature and it is carried out through our operations as strictly as it is possible to do. Our instructions are rigid and our superintendents are rigid in seeing that they are enforced. In our opinion, it is the only point and feature of the wirebound box that makes it really a tenable proposition as a manufacturing project, manufacturing boxes that will do what you represent them to do. As we plan our operations, the question of the overlap is automatic, cannot fold the box without getting the overlap and when you get the overlap you get the tension.

R-D. Q. 94. From your knowledge of the box making industry since 1900, what, in your opinion, was the importance, if any, in the wirebound box industry of the invention of the lap corner wirebound box, such as your company is now manufacturing?

A. We attribute the present use of wirebound boxes and the present favorable consideration given them in many quarters to that feature. I can recall some instances where we are now supplying wirebound boxes to concerns who during several years prior to the time we undertook to sell the wirebound boxes, had at various times tried to use wires

bound boxes and found them unsatisfactory and they are using our boxes with success and satisfaction.

R-D. Q. 95. Do you or have you since 1900 known of any successful commercial operations in the manufacture of [fol. 816] wirebound boxes, which were not based upon the manufacture of lap cornered wirebound boxes having an overlapping relation of side material at each corner of the box?

A. I have always been under the impression that the leading manufacturers are manufacturing or representing to manufacture that sort of a box.

(d) The deposition of Henry Stephens, on plaintiffs' rebuttal, is offered in evidence, as follows:

DEPOSITION OF HENRY STEPHENS

HENRY STEPHENS, witness on behalf of plaintiffs, testified:

Direct examination.

By Mr. Janney:

I am 74 years of age; lived in Chicago 60 years or more; occupation is secretary of the Box Manufacturers' Association. It is an association for the purpose of giving each other information pertaining to all things in that line of of business; co-operating with each other on labor questions; that is substantially the meaning of the organization, or its purpose. I was actively engaged as a manufacturer of boxes for about 22 years, beginning in 1868. Since I ceased to manufacture boxes I have been interested in the same line, as secretary of the Box Manufacturers' Association, as I stated, with the exception of perhaps an interim at two different times of one or two years.

I knew a man named John Howenstine at Ft. Wayne, Indiana, and by comparing dates would say I first met him about 23 years ago, which would make it within a year or two of 1893. I had business with him, and the character was that he was desirous of introducing a new invention and desirous of disposing of that invention, and I finally bought it of him.

Q. 10. I show you a document under seal of the Patent Office, purporting to be a copy of a license and agreement made June 6, 1891, between John Howenstine of Ft. Wayne, Indiana, and Henry Stephens of Chicago, Illinois. Please examine this and see whether you can identify it?

A. This states $3,587.50. Of course, I would not recollect that. I know it was along between three and four thousand dollars that our negotiations were based upon. I see from here the exact amount, which it would have been impossible [fol. 817] for me to have stated had I not just seen it. Without reading it over, it refreshes my memory that I was a party to this contract. Of course, my signature is not on here.

In about 1891 I entered into some such arrangement with John Howenstine as described in this instrument in an experimental way and finally bought it of him. The patent to John Howenstine of Ft. Wayne, Indiana, No. 453,479, is the one to which my transaction with Mr. Howenstine related. At the time I made this arrangement with him, he had a very crude machine for making these boxes. I attempted to make boxes on that machine in an experimental way, that is, to see what the prospects were to get a machine that would do the work. In other words, we saw right off that machine was not a merchantable kind, or a machine that would do the work. I think we experimented with this machine probably 8 or 9 months. After that I obtained an inventor named Jacob Uhri to make a machine to do the work. We used this Uhri machine only in an experimental way right in the factory where the machine was built, we made some boxes and had made boxes before but not in the manner that a machine should make them. In other words, the machine was imperfect and we had to build another one. I think he had been working on the first machine and got the idea, the idea to build another machine, we thought it better to let him continue than to try another inventor, that it would save time. There were two of the Uhri machines, a first and a second. I would say we used these two Uhri machines a year and a half. Shortly after I had secured the patent from Howenstine I had two other parties that put in some money to complete the second machine. I should say they came in a little over a year after I had gotten the patent from Howenstine. They were C. C. Thompson and

George Henry and I should say they remained associated with me in the business about 8 or 9 months.

Q. 27. During the time that you were interested in experimenting with the Howenstine machine and the two Uhri machines, what was the construction of the box you were trying to make?

A. Substantially the box you just showed me in that patent or a box having intercellular ends, one piece of veneer for the top, bottom and the sides.

Q. 28. What was the condition of this one piece of veneer at the corner lines of the boxes?

A. You mean after bending it, after it was folded?

Q. 29. Before bending.

[fol. 818] A. It was then one piece of veneer attached to two cleats and the cleats were then cross-cut into a step-miter and a V-shape grooved into the veneer along the lines where it should fold over.

Following my first arrangement with Mr. Howenstine, I was active for about four years in attempting to manufacture these boxes. After Mr. Thompson left, Mr. William P. Healy engaged actively in the business with me in connection with these boxes. The one piece scored veneer boxes we were trying to make were wirebound and the wires were stapled to the one piece veneer and the cleats. During the time we were trying to make boxes of this type we never succeeded in establishing a going business in the manufacture and sale of the boxes; only to the extent of introducing this particular type of box to the merchants; that is, some of the merchants. In dollars and cents the amount of the gross sales that we made was very insignificant, I think probably not to exceed a hundred and fifty dollars, because I gave a great many of these boxes away for samples, introducing them. After these scored veneer boxes were folded, in some cases the veneer would split clear through this V-shape that had been cut in the veneer, leaving an opening in places. In other words, it was not a real tight box. At that time I considered the box a strong box. I advocated that it was a very strong box for the thickness of the lumber that was used in making it. I contended that it was much stronger than the ordinary box. In fact, I made a test in a crude sort of a way that satisfied my mind that it was an unusually strong box. To test the box, I made a double cleat 7/8" box

for a hardware concern and filled it up with a lot of fire brick that came from beneath the boiler in Uhri's shop, the only material we had there, this fire clay brick, you know, in pieces, and shoveled it right into the box, and put the same amount — if I recollect right, it was about two hundred and eighty pounds — and we filled one of the new boxes with the same material and of the same weight. The shop being on the second floor of the building, fronting on an alley, we threw the boxes out of this window down into an alley. In other words, tipped them off the window ledge to see what the result would be. The result was that the seven-eighth box split all to pieces and the stuff all came out. The wirebound box was a little bit out of shape but the material was all inside, it lost none of its material. So with that kind of a test it convinced me that it was a stronger box than the seven-eighth box.

Q. 40. By the seven-eighth box you have referred to do [fol. 819] you mean an ordinary nailed box made out of seven-eighth inch lumber?

A. Yes, speaking of the thickness of the material ordinary nailed box, a seven-eighth nailed box is supposed to be as strong a box as you can make of lumber.

This test was made a year or a year and a half after my first arrangement with Mr. Howenstine.

After I severed my connection with the business started after my arrangement with Howenstine, I saw these scored veneer boxes made at South Bend, Indiana. As I recall, Mr. B. F. Masters, of the firm of Rathborne, Hair & Ridgeway Company, went with me at that time. The plant was called the Wirebounds, I don't know whether it was called the National Wirebounds, but the party who was operating it was Mr. Robinson and he was the man who invited me down there to see the improved machinery. I was under the impression that Mr. William F. Healy had been connected with this South Bend business that Mr. Robinson was interested in; whether he had sold out to Robinson or not, I could not say. As near as I can recollect, Mr. Masters is correct in saying that he and I went to South Bend and saw some of these scored veneer boxes made early in the year 1904. I cannot say whether I ever made more than one trip to South Bend with Mr. Masters. I have a faint impression that there was a second time that I went down there and I cannot say now who it was with, whether it was

Mr. ———. It might have been Mr. Yegge or Mr. Limbach, or somebody from that concern. That is only an impression. I could not possibly swear to that. At the time Mr. Masters and I went to South Bend we saw the machine making the scored veneer boxes in operation. These boxes were substantially the same as those I had made when experimenting with the Uhri machines, but the machinery was somewhat improved for making them but I could not say now in what respect it was an improvement; that was the impression that we came away with, that they were improving all the time on those machines. I considered the South Bend scored veneer boxes practical and a good commercial proposition as far as the box was concerned; I did not consider the machinery as being perfect. My recollection is that the corners of the boxes I saw with Mr. Masters in South Bend were substantially the same as of those boxes I made on the Uhri machines, referring especially to the splitting of the corners where they had been grooved or scored. They had not overcome that breakage of turning the veneer over the edge. As to whether there was an actual going business [fol. 820] in the manufacture and sale of those South Bend scored veneer boxes, this same party, or the same factory that I visited at that time, was selling boxes right there in South Bend, and one particular purpose I recollect was for flat irons, which was surprising to us because unusually heavy goods. I simply say that to confirm that they were making boxes for flat iron concern, that is the only reason.

Q. 24. But you actually know that they were selling boxes, or were you told so, when you were in South Bend?

A. Told so. I saw the boxes. The concern adjoining them was the concern that made the flat irons and it was naturally to be supposed that they had sold them the boxes when they were using them right there adjoining their factory.

I have really forgotten how long I remained in South Bend on that trip with Mr. Masters, I should say four or five hours; I have really forgotten the time the train came back; we didn't stop over night at all; went down and got there in the afternoon and came back on the evening train; I would say we were there about four or five hours.

Cross-examination.

By Mr. Hood:

Those boxes I first saw had the wires twisted together at their ends in closing the box. Whether the wires were drawn tight when they were twisted depended altogether on the man twisting them. One man would take a pair of pinchers and take two or three times as many turns as another man would; the more turns the tighter it would be. Some of my boxes were used in shipping goods and the goods reached the consignee in good condition. The reason I know that is because of a peculiar circumstance. I was making boxes for a large hardware concern called the Allen Manufacturing Company, and they used mostly the heavy seven-eighths nailed box, but they were making very long shipments away out to Seattle and Portland, all those places, and I said to Mr. Crane, who was one of the partners, that I had a new kind of box that I would like to have him try and when I showed him the box he laughed at the idea that three-sixteenths veneer would carry hardware, perfectly ridiculous to his mind. Well, I went on to explain to him that the box was a much stronger box than it appeared to be, and I asked him if he would not, as a favor, ship ten or fifteen of these boxes to his furthest shipment and I would take the responsibility for any unusual damage that might occur, or all damages over and above the ordinary damages that occur with nailed boxes, and being a friend of mine he condescended to do it. [fol. 821] He did so, and it was quite a while before we got returns but we heard from it and I was in there every day or two getting orders for making these other boxes and he called me up to his desk and said: "Well, Stephens, I have heard from those boxes." I said: "Yes"? He says, "They are all right." He says, "It is a big surprise to me. They told me the boxes arrived there better than any boxes they ever had. The difference in the freight was considerable." I have forgotten what it was. He said: "When you get ready to make boxes we will do business with you." That is how I recollect that particular circumstance of what the conditions were after they arrived.

Redirect examination.

By Mr. Janney.

I should say it was about two years after my first arrangement with Mr. Howenstine that I had this experience I have just described.

By agreement of counsel, and pursuant to the stipulation heretofore made of record and dated May 19, 1925, plaintiffs' counsel, under paragraph 7 and the sub-paragraphs thereof of said stipulation, offers in evidence the following:

1. From the record in the United States District Court, for the Northern District of Illinois, Eastern Division, in Equity No. 2689, Wirebound Patents Company and 4-One Box Machine Makers, plaintiffs, v. H. H. Gibbons Box Company, defendant:

(b) Certain parts of the deposition of John Howard McElroy, expert for defendant, are offered in evidence as follows:

Deposition of John Howard McElroy in Rebuttal

Cross-examination.

By Mr. Janney:

If my recollection is correct, at the time I prepared the affidavit in opposition to the motion for preliminary injunction in the present suit, I read the opinion written by Judge Sanborn in the suit of the present plaintiffs against the Chicago Mill and Lumber Company based upon the reissued box patent which is here in suit.

[fol. 822] X Q. 2. I recall to you the following remarks made in Judge Sanborn's opinion, which I shall quote verbatim:

"Aside from the question of reissue this patent, like that in question in the recent case of Miner v. T. H. Symington & Co., in this circuit, 229 Fed. 730, C. C. A., there are no new elements in it, and its validity depends entirely upon the arrangement of parts. Such arrangement combines the parts in a new way. The result is beneficial and highly

useful. The box is flexible, elastic, strong, light, has proved very successful, and was the first of its kind. If it did not actually create the wirebound box industry, certainly it was a most important factor."

I call your attention to Judge Sanborn's remarks that "the *box* * * * was the first of its kind."

Do you agree with Judge Sanborn's statement which I have just quoted?

A. So far as I know there is nothing out of the way in Judge Sanborn's statement quoted, but you must remember he was talking about the expired box patent and also that defendant's structure complained of in that suit infringed the patent, if valid. I do not believe that Judge Sanborn would have found that defendant's box blank in the present case infringed that patent, because Judge Sanborn was a good patent judge.

I don't know that I would go so far as to say I agree with Judge Sanborn that the box of the expired reissued patent is "flexible, elastic, strong, light, has proved very successful, and was the first of its kind." I believe that the blank shown in the reissue patent was the first of its kind, but so far as I can see, the completed box did not differ substantially from the box produced on the old Rosback machines.

I realize that the box produced on the old Rosback machines was before Judge Sanborn and strongly relied upon by the defendant in the very case in which Judge Sanborn rendered the opinion containing the remarks quoted above. The fact remains that the Inwood & Lavenberg reissued patent is for a blank, and not for a completed box, and that with that specific blank, a box could be constructed more cheaply and possibly somewhat better than the box of the Rosback patents. It is furthermore a fact that defendant in that case used such a blank as is contemplated by the Inwood and Lavenberg reissued patent in suit, and the question of whether or not there is an actual infringement and a deliberate appropriation of the invention of the pat- [fol. 823] ent in suit always carries a great deal of weight with the court in its finding as to the validity and scope of the patent in suit. The quotation made from Judge Sanborn's opinion uses the term "box," but he may have had

the blank in mind when making the statement, in spite of the box and box blank disclosed in the Rosback patent.

X Q. 6. In order to test the validity of the supposition which you have just stated, I will quote a further statement contained in Judge Sanborn's opinion:

"In this construction the particular shape of the four cleats at each end is not vital. In the original patent the claim required them to be step-mitered at the ends, so as to give greater strength to the box, and enable it to keep its square shape. Novelty, however, did not consist in the shape of the cleats, but the bringing together of cleats, sides, top, bottom, ends and wires to make a practical, efficient, strong, light structure, in which the ends served to brace it and prevent crushing, rendering the particular shape of the cleat ends where they touch each other less important in preventing perpendicular or horizontal movement of the parts upon each other."

When Judge Sanborn thus refers to the bringing together of the various box parts including the ends, and to the functioning of the ends, do you understand that Judge Sanborn was referring to the box or to the blank?

A. He was really discussing the question of whether or not the reissue with the broader claims was warranted, and in that respect I fully agree with him, because the use of the step-mitered cleats added nothing whatever of novelty to the blank, because step-mitered cleats were employed in the Rosback blank.

Judge Sanborn may have had in mind the box, but the patent was nevertheless for a blank.

By Mr. Janney: First paragraph of the answer objected to as volunteered and argumentative.

By Mr. Cox: Defendant's counsel doesn't wish to interfere in a full cross-examination, but it is evident that when matters of pure opinion are discussed as in the present case where Judge Sanborn's opinion is being inquired about, the witness cannot confine himself to a discussion of structures and comparison of one with another.

X Q. 7. When Judge Sanborn said, as I have just quoted, that novelty consisted in "the bringing together of cleats,

sides, top, bottom, ends and wires to make a practical, efficient, strong, light structure," etc., is there any doubt in [fol. 824] your mind that Judge Sanborn was there referring to the novelty which resides in the box regardless of the blank?

A. Well, I don't believe for an instant that in making his statement Judge Sanborn had disassociated from the box the particular blank covered by the patent used in making the box.

X Q. 8. Is that the best answer you can make to my question?

A. And tell the truth, it is.

My opinion is that there was no very substantial novelty certainly in the Inwood and Lavenberg box of the reissued patent, considered as a finished box. There was this difference in that the boxes disclosed in the Rosback patent did not have the sides separated completely but they were connected by a very thin layer of wood which might or might not split through when the box was formed. If the grain of the wood ran accurately along the length of the box and the veneer was dry I would expect them to split through. There was another difference in that theoretically at any rate if the Inwood and Lavenberg blank were used, the wires at the corners of the box would bite into the edges of the sides a little more than occurs in the boxes shown in the Rosback patents. As the wires in defendant's boxes do not bite into the corners any more than in the boxes of the Rosback patents, I have not thought that this difference was material in the present case.

I had no actual experience with the making or use of a box made in accordance with what I have referred to as the Rosback blank, but of course, I have watched the operation of the manufacture of defendant's boxes herein complained of. I have never witnessed the making of a Rosback box; and by that I mean a box having its sides integrally continuous and scored at the box corners. I have certainly never witnessed any tests or any use of such a box and I do not recall ever having seen one. I do not recall ever having seen the Rosback box having the scored veneer side sheets. If I ever saw one, it did not make enough impression on me so that I examined it carefully. I do not at

present recall any differences between the Rosback box referred to and the box of the Inwood and Lavenberg reissued patent, except, first, that the latter has entirely separate side sheets as distinguished from the Rosback scored side sheets; and second, that there is at least a greater tendency of the wires in the Inwood and Lavenberg box to cut into the box corners.

[fol. 825] X Q. 15. In the Rosback box is there any overlapping of the edge of one side sheet by the margin of the other as in the Inwood and Lavenberg box?

A. There are three Rosback patents that actually disclose the box. In Figure 35 of No. 609,630 and No. 38 of 623,258 there might be said to be a trifle of overlapping in the fact that the thin section at the corners presumably belongs half to each side and to that extent overlaps, but that overlapping is different from the overlapping of the Inwood and Lavenberg patent in suit. There is a box shown in Fig. 37 of the Rosback patent 608,917 that is presumably the same as the others, although I note in the description of the box a factor which might result in its being the same as the overlapping of the side edges of the Inwood and Lavenberg box inquired about. Beginning with line 23 of page 1 of the specification of the last-mentioned Rosback patent, it says:

"The wirebound box referred to consists of a sheet in one or more sections, reinforced on one side with cleats and at its opposite side with strengthening wires, the sheet and wires being fastened with staples to the cleats, and the blank thus formed being step-mitered and bent at the step-mitered cuts to form the top, bottom, and sides of the box. A wirebound box is shown in perspective in Figure 37."

I note that the sides in the blank consist "of a sheet in one or more sections," and if these sections corresponded in width to the sides, as shown in the Rosback patent 625,958, Figure 1, I see no reason why such a box as that formed by the blank of the Inwood and Lavenberg reissued patent in suit might not be produced, as in that case there would be no need for the saw that cuts into or scores the underside of the single continuous sheet. Whether or not any such boxes were ever produced on the Rosback machine I have no means of knowing.

X Q. 16. Do you intend to be understood as stating that in your opinion the blank of the Inwood and Lavenberg reissued patent could be made in the manner you have just suggested, starting with rigid cleat lengths and separate individual side sheets, securing them together with the binding wires and then step-mitering the rigid cleat lengths but without severing the sheets?

A. I see no reason why that could not be done provided the four sections that went to make up the sides assembled as shown in the Rosback patent 625,958 were of the width of the sides of the box, and provided the saws shown in Figures 31, 32, 33 and 34 of the Rosback patent 669,630 were [fol. 826] changed, why precisely the blank of the Inwood and Lavenberg reissued patent could not be produced. I would not, however, consider this anything like so good a method of manufacture as step-mitering the ends of the cleats before they are attached to the sides.

X Q. 17. Do you mean to imply that it would be within the range of the expected skill of the mechanic so to modify the Rosback materials and the saws as to produce exactly the blank of the Inwood and Lavenberg reissued patent, assuming that the ordinary mechanic had before him the Rosback patents and also the Inwood and Lavenberg reissued patent?

A. I don't think the ordinary mechanic would do anything of the sort unless he was told to do it. If he was told to take the materials and modify the saws used in Rosback patents to produce the specific blank shown in the Inwood and Lavenberg reissued patent, he could do it.

I don't think it would require any invention to discover that the Rosback materials and saws could be so modified by the mechanic so as to permit them to produce exactly the blank of the Inwood and Lavenberg reissued patent. Your question assumed that he had the Inwood and Lavenberg reissued patent before him to disclose just how the blank was to be when it was completed.

X Q. 19. Do you mean to say that if the mechanic having the Inwood and Lavenberg reissued patent before him and knowing how the blank was to be when it was completed, would find it obvious that he could so modify the Rosback practices as to produce exactly the Inwood and Lavenberg blank in the way which you have described?

A. The mechanics with whom I have come in contact, if they were fully conversant with all the details of the Rosback machines and boxes, and were given the Inwood and Lavenberg patent and told to produce it by the Rosback machines by the use of separate side pieces such as shown in the Rosback patent 625,958, could easily do it, and in so doing would not in my opinion exercise any patentable invention.

X Q. 20. What, if anything, do you know of the facts proved in the litigation before Judge Sanborn that for ten years or more persistent attempts were made to manufacture the Rosback box commercially but those attempts encountered insurmountable obstacles; while within a matter of very few months after the invention of the Inwood and [fol. 827] Lavenberg box a successful business had been established in that box?

A. Nothing directly. I have read Mr. Babcock's deposition given on behalf of the complainant in the present proceedings which as I recall it sets out substantially the statement you have recited.

X Q. 21. Then you have no knowledge of the practical development work which preceded the Inwood and Lavenberg inventions?

A. My actual experience with packing boxes has been confined almost solely to the heavier board structure that was generally used before wood became so expensive and it became desirable to lessen the amount of material used in the boxes. Of course the prior art patents which I have referred to in my deposition show as publications that there had been a great deal of activity in the art for many years. I have had no knowledge as to the practical effect in the art of whatever contribution is represented by the several Rosback patents to which I have referred. Apart from what information I gathered from Mr. Babcock's testimony, I think it is correct that my testimony as to the pertinency of the Rosback patents to the issues of the present suit is based solely upon the information I derive from the faces of those patents. Of course in making my comparison of the structures shown in the Rosback patents with the patents in suit, I have been looking at them from the point of view of a mechanical expert, and not from the standpoint of the owner of the patents in suit.

I might have gained some information as to the practical structure and behavior of the Rosback box by the observation of the samples of the box itself or by tests of the box in comparison with plaintiffs' and defendant's boxes. Of course in considering a mechanical structure and its possibilities, it is natural to assume that the structures are built in the best possible manner disclosed, and that they employ the best possible materials to work with, which usually means that they necessarily employ more expensive material than might be commercially practical.

X Q. 25. In any case, for the purpose of your present testimony, you have been content to rest your statements as a mechanical expert with reference to the Rosback patents and their pertinency, simply upon the information which you have derived from the patents themselves?

A. I would scarcely say that I was "content" to do so, but as I was advised that the Rosback box is not now manufactured and supposed that the machinery had been scrapped, of course I made no effort to find either the boxes or the machinery. If they had been available, of course I would have looked them up carefully.

I find a disclosure of a purposeful tensioning of wires over the box corners in either of the Rosback patents 609, 630 or 623,258, Figures 35 and 38 of which, respectively, show a structure in which the wire is necessarily put under some tension at the corners when the blank is folded to make the box. Without stopping to read the patents again, I do not recall whether or not this tensioning of the wires is commented on, although anybody would know that it was of value in a wirebound box, although not vital.

X Q. 27. Do the drawings of the Rosback patents to which you have just referred indicate any such tensioning of the wires over the corners of the boxes as causes them to cut into the wood of the corners?

A. They are not shown as cutting into the wood, although they would do so to a small extent. The simple way to make the drawing at the corner was to use the plain arc of a circle and the draftsman did so, although if his attention had been called to the cutting into the wood he would probably have shown it that way.

X Q. 28. I cannot tell from your answer to X Q. 15 whether or not it is your opinion that the Rosback box, as

shown for instance in Fig. 37 of the Rosback patent 608,917, teaches the idea of the overlapped side sheet edges which is disclosed in the Inwood and Lavenberg box reissue. Please explain what your opinion is in this respect.

A. I would not say that it clearly teaches it. It is a possibility that one operating the invention of the Rosback patent 608,917, if he used a side sheet material made up of several sections of the same width as the sides of the completed box in the manner illustrated in the Rosback patent 625,958, might produce a box like that of the Inwood and Lavenberg reissue patent in suit.

X Q. 29. Do the Rosback patents teach the idea of preforming four side sheets, separately from each other, each having the proper dimension for a finished side of the box?

A. I should say that the Rosback patent 625,958 clearly teaches forming at least three sides of the box in that manner, and inasmuch as it was common to make a four sided box under the teachings of the Rosback patents, anybody would without any effort make a four sided box in the same manner as disclosed in said Rosback patent No. 625,958. [fol. 829] I see no reason why it might not be the intention that the three side sheet pieces Y shown in Fig. 1 of the Rosback patent No. 625,958 are intended to represent three separate side sheets each dimensioned appropriately to a side of the box, although I note that the section adjacent the pusher D is slightly narrower than the other two sections, it being approximately seven eighths of an inch wide while the others are one inch wide on the scale of the drawing. I also note that the distance from the edge of the pusher to the farther edge of the adjacent section is also one inch, so that it looks to me as if the draftsman had made a mistake in his measurements and had measured from the edge of the pusher instead of the edge of the sheet section. Of course I am assuming that he was figuring on a box rectangular in cross section. Assuming that the drawing illustrates all the sides expected to be used in the machine, it is true that the product of this machine would be a rigid blank for a three sided box having no top. However, the draftsman may have omitted a section inadvertently in making the drawing.

X Q. 32. Do you note that cleats X in the drawing are of approximately the length to suit the aggregate lengths of

the three side sheets Y, and having noted this do you suppose that the cleat was thus short by a draftsman's inadvertence, or do you suppose that the cleats were intended to be only for a three sided box or do you suppose that the cleats were intended to be of sufficient length for the sort of four sided box which is shown in all the other Roebuck patents which were contemporaneous with the one we are discussing?

A. If boxes were always made of the same relative dimensions, and if patent drawings were always accurately dimensioned, which is rarely the case, some proper inference might be made from a comparison of the different box blanks shown in the different Roebuck patents. The simple supposition would be that it was a draftsman's inadvertence either in the length of the cleats or the number of side sections shown.

In view of the following excerpts from the Roebuck patent No. 624,118, page 1, line 17, and page 2, line 99, is my opinion that patent discloses the idea of making a four sided blank employing two or more abutting sheets to compose the side material for the blank:

"Each blank is of a length to make four sides of a box, the cleats and sheet being cut apart at points midway at the proper points to permit folding of the blank."

[fol. 830] "It will be understood from the foregoing description that the present machine is for the manufacture of box blanks comprising, more especially, a sheet, which may be one or a number of adjacent abutting pieces, and cleats, all of which are advanced through the cleat and sheet guides," etc.

It is possible that the disclosure in Fig. 1 of the Roebuck patent 625,958, indicating the three pieces Y of side material, might be considered as exemplifying the practice of this idea of making a four sided blank with two or more abutting sheets of side material, but I do not think probable for the reason that the patent says nothing about grooving the side material, although it does speak specifically about the "further operation of step-mitering the cleats, thereby to finish the blank and adapt it to be folded into box form." If the veneer side sheets were not grooved

it could not be folded into box form after the cleats had been step-notched. For this reason I assume that the width of the separate side pieces shown was the width of the sides of the box. On the question of whether Rosback boxes were ever in fact made without scoring the veneer sheets and merely by binding the side sheets of veneer, I have already said that I do not know what the actual practices by the owners of the Rosback inventions were. Bending the unscored veneer would seemingly be much more difficult and produce a poorer box than by scoring. However, I can see that there might be difficulty in the scoring saw contacting with the wire sometimes.

X Q. 36. You made the flat statement in answering X Q. 34 that if the veneer side sheets were not grooved "then it could not be folded into box form after the cleats had been step-notched," and you now say that that statement admittedly, without having known anything at all about the actual practice with the Rosback box, in fact, without ever having seen a Rosback box. As it happens your supposition, which you have chosen to state as a fact, is quite erroneous, a circumstance which I now ask you to assume, and I ask you to give me a further answer to X Q. 34, which I repeat.

A. I may assume something without believing it. In answering X Q. 34 I did not consider that the veneer side pieces would be steamed so they could be bent without scoring, and I do not know whether the owners of the Rosback inventions ever resorted to this practice or not. Unless they did, I do not see how they could bend any ordinary [fol. 821] veneer to produce a box that would be at all desirable as the corners would inevitably be very rough. I already answered the question that it was possible, but I did not think probable, for the reasons I stated in my previous answer, and am entirely willing to let that answer stand in spite of your assumption.

Except for the matters already discussed in connection with Rosback patent 625,958, I do not find in any of the Rosback patents any remotest suggestion of a purpose to be served by making a three sided box; or of the manner of making a cover for a three sided box. In this patent 625,958, if a three sided box were made with the blank shown in Fig. 1 employing the three side pieces there shown as the

in the finished three-sided form would stand opposite the lowermost side piece Y. As these sheets are shown in the patent, the two sides which I have said would stand opposite to each other would not be of the same width, one of them being only seven-eighths as wide as the other, assuming that the draftsman made no error in dimensions. For a three-sided open box to deliver groceries, for example, that would be an immaterial matter. It is not my supposition that what would be a lop-sided three-sided box was deliberately shown in this Rosback patent, because its lop-sidedness would be immaterial. My supposition was that the draftsman made an error. The error I have in mind is not necessarily that the lowermost edge of the lowest sheet Y does not extend clear down into contact with the cleat pusher D or g'. The error might be that after outlining the position of the side sheet material on the cleats in Fig. 1, the draftsman did not divide the distance between the rear and front end of said material into three equal parts before drawing the two transverse lines which appear thereon. Or, if the box was not square in cross-section, the error was in not making the top and bottom sections of the side material of the same width. In the specification of this patent as distinguished from the drawing, I do not find any evidence of an intention to make a three-sided box rather than a four-sided box. Only the implication by the fact that the specification speaks of the step-mitering of the cleats and says nothing about the grooving of the side sheets, I do not find in the specification or in the drawing any evidence of an intention to have the side material in Fig. 1 divided into three equal parts or to make the top and bottom sections of the side material of the same width.

X Q. 44. If the rigid blank which would be made by the [fol. 832] machine of this Rosback patent 625,958 and employing the sections shown in Fig. 1 were passed through a step-mitering and scoring machine properly adjusted to make a four-sided box out of that blank, would the result be a four-sided box blank of the usual Rosback type?

A. This machine does not make the box blank, as assumed in your question, but is merely used to assemble the cleats and side material in proper relation to deliver them to the stapling machine, thus having the same relationship to the completion of the blank that the Inwood and Lavenberg

patent No. 1,128,144 has. Assuming, however, that the material thus assembled has been passed through a proper stapling machine and subsequently scored as stated in the question, the result would be a four-sided box blank.

Considering eight cleats to start with instead of two, I do not find in the Rosback patents any suggestion of the idea of a blank made of preformed individual cleats, and preformed individual sheets, each initially separated from the others, but assembled and wired together as illustrated in the Inwood and Lavenberg reissued patent. I do not find in the Rosback patents any suggestion of a box having four (instead of eight) individual preformed cleats, entirely separate from each other, and assembled with side material and wired together to form a foldable box blank.

X Q. 47. What prior art patent most nearly corresponds, in your opinion, with the box disclosed in the Inwood and Lavenberg reissued patent?

A. As I see it, there are two features of the Inwood and Lavenberg completed box, one is the relationship of the sides and the cleats, and that is shown as well as anywhere in the Archer British patent No. 4793 of 1889, and the other is the method of wiring the cleats and side pieces together, and that is shown in any of the Rosback boxes.

X Q. 48. Do you realize that the Archer British patent No. 4793 of 1889, and the Rosback patents to which you have referred, were before Judge Sanborn and were strongly stressed as prior art by the defendant in the suit against the Chicago Mill and Lumber Company; but that nevertheless Judge Sanborn sustained the Inwood and Lavenberg reissued patent and commented thereon as I have quoted above?

A. I know that the Rosback patents were considered by him, and it is possible that the Archer patent was also considered, in his finding that the patent was valid and infringed by a full-cleated box-blank structure.

X Q. 49. In answering X Q. 47 you referred to two fea- [fol. 833] tures of the Inwood and Lavenberg completed box, first, the "relationship of the sides and cleats," and second, "the method of wiring the cleats and side pieces together." And you said that these two features respectiveley were shown in separate prior art patents. Do you find any prior art patent which combines these two features

as they are combined in the Inwood and Lavenberg completed box?

A. I would not say that they are "combined" in the completed box, as in my opinion they are merely aggregated. If there could be any combination, broadly speaking, of the features you suggest, that combination would be shown in the Healy patent No. 768,123, although there the parts are bound together by flexible metallic straps nailed to the parts instead of flexible wires stapled to the parts.

It is true that the box of this Healy patent employs side sheets 1, 2, 3 and 4, which are beveled at their edges, and in the completed box meet on a 45° angle, but it would make no difference if you were considering the broad combination of the two features referred to, and there was nothing novel in the specific method of overlapping the sides of the box employed in the Inwood and Lavenberg reissued patent, as that has been the customary method of making packing boxes for forty-five years to my personal knowledge. It is likely that this same Healy patent No. 768,123 was before Judge Sanborn and was strongly stressed by the defendant in suit against the Chicago Mill and Lumber Company, but that nevertheless Judge Sanborn sustained the Inwood and Lavenberg reissued patent with the comments above quoted, although I was not present and not connected with the case at that time and I do not know it as a fact.

I distinguish between a combination and an aggregation as I have used the terms above, as follows: A combination in a patentable sense is where certain elements are brought together in a novel relationship, producing a novel result, irrespective of the specific form of said elements. Where the same relationship existed in the prior art, the Patent Office considers that merely changing the specific form of one of the elements without changing the relationship and method of operation resulting in the original combination is merely aggregating that specific feature, and I have used the terms in that sense.

X Q. 53. Don't you realize that the distinction between a combination and an aggregation of mechanical elements is founded upon this alone: That in the combination the elements coact to produce a joint result while in an ag- [fol. 834] gregation the elements produce independent several results?

A. Well, that depends on how you are using the terms. What I had in mind was what is commonly termed a patentable combination as distinguished from a non-patentable aggregation. If you are using the words broadly, without reference to the patent practice, one definition would obtain where otherwise another definition would be necessary.

Except for my estimate of the Healy patent No. 768,123, the collocation (disregarding whether it amounts to a combination or an aggregation) in the Inwood and Lavenberg completed box of the two features of the side sheet and cleat relationship on the one hand, and the method of wiring on the other hand, is a novel collocation, when you take into consideration the specific form of each and every element, as the specific form of the side pieces in the Rosback boxes in the disclosure about which there can be no dispute, is different from that of the completed Inwood and Lavenberg box in that the edges of the side pieces of the Inwood and Lavenberg box overlap squarely, as has been the practice in making packing boxes ever since I was old enough to know anything about it, whereas in the Rosback box the edges of the sides do not squarely overlap, but the adjacent angles come together and the outer portion of the outside edges has the thin curved film, so to speak, connecting them, unless it should happen that the film splits through completely when the box blank is folded. Otherwise the Rosback and Inwood and Lavenberg boxes are identical.

Taking into consideration every detail of the form of construction of the various elements, I would be inclined to say that the Rosback boxes are the closest approach that I find in the prior art to the collocation of elements which I have last described, although as I pointed out in the overlapping of the edges at the corner, the Archer British patent is closer.

X Q. 56. I have been asking you about a collocation of elements, to-wit, the collocation of separate preformed side sheets and separate preformed cleats and wires encircling the finished box and secured to the sheets and cleats as illustrated in the Inwood and Lavenberg reissued patent. I want you to point out, if you can, one prior art patent in which that collocation exists. You have admitted the obvious fact that the Rosback boxes do not employ

separate sheets and separate preformed cleats and they therefore do not show the collocation inquired about. You have also admitted the obvious fact that the Archer Brit- [fol. 835] ish patent does not show wires at all, and therefore does not disclose the collocation inquired about. Please confine your answer to a single patent which in your estimation shows this particular collocation.

A. As I understand the purport of your present question, the Healy patent 768,123 shows such a collocation, but Healy employs metal straps and nails instead of the wires and staples employed by Rosback and Inwood and Lavenberg. Healy does not disclose that collocation when limited to one involving wires as distinguished from straps.

X Q. 58. Again limiting the collocation inquired about to one involving wires as distinguished from straps, where, if at all, is that particular collocation disclosed in any single prior art patent?

A. I think that I have already said that there is no one patent that shows every specific detail of the construction of the Inwood and Lavenberg blank in suit. The question is not whether the Inwood and Lavenberg patent is squarely anticipated by any one prior art structure, but whether or not it involves any patentable invention to make certain obvious modifications of the prior art structures.

X Q. 59. You are wholly wrong in your statement of what the question is which I have been inquiring about. I am trying to find out, as you well understand, whether you find in any single prior art patent a disclosure of the collocation which I have described, in a completed box. Please give me a definite and unevasive statement on this subject.

A. Well, if you cannot see that my answer to X Q. 58 is definite and unevasive, I have no hopes of being able to satisfy you.

X Q. 60. Your answer to X Q. 58 is evidently evasive, because in pursuance of your argumentative policy you have limited the effect of the first sentence in your answer to the Inwood and Lavenberg blank when I had been discussing, as you well understand, the completed box. I want an answer to X Q. 59, in which you confine your statement to the completed box.

A. If you will show me where the word "box" occurs in X Q. 58 I might accept your delicate criticism, but it is

not there. I am endeavoring to tell the whole truth as I see it, and as attorney for the complainants herein, I do not expect you to see things in an unbiased manner. I could satisfy you by answering numerous questions yes or no, and in so doing I would mislead the court by telling [fol. 836] only partial truths. Coming now to X Q. 59, my answer would be the same as to X Q. 58, only you may substitute "box" for "blank" if you cho-se. I used the term "blank" because the patent is for a blank.

X Q. 61. I made it clear in X Q. 56 that the collocation I described, and which I continued to refer to in X Q. 58, related to "the finished box." Please bear in mind that I shall continue to refer to the finished box until I advise you to the contrary.

Am I to understand that you now answer, amending your statement under X Q. 58 as you have suggested, that there is no prior art patent that shows every specific detail of the construction of the completed box shown in the Inwood and Lavenberg reissued patent in suit?

A. That is true, because the corners of the Rosback boxes are connected by the thin film I have already fully discussed.

X Q. 62. Please disregard specific details and answer this question: Do you find in the prior art any single patent which shows a completed box comprising four separate preformed side sheets, each equipped with two separate preformed cleats, the box being encircled by wires (as distinguished from strips), the wires being attached by straddling staples which pass through the sheets and anchor in the cleats—and please disregard the relationship between adjacent edges of the sheets, i. e., whether they overlap or not?

A. Sure. That describes the Rosback box exactly, except in the matter of the "preformed" limitation, and that has absolutely nothing to do with the box structure, but it does have to do with the method of manufacture.

X Q. 63. Please point out where we may find a disclosure of the Rosback box comprising (to quote from X Q. 62) "four separate preformed side sheets."

A. Any one of the Rosback patents that shows the completed blank and box, shows that it has four separate side pieces, although they are not "preformed," owing to the fact that they are made by a different method, and the

four separate sides not totally separated in that theoretically at any rate, they are connected by a very thin film of veneer, which would probably split in practice, especially if the grain ran that way.

X Q. 64. In order to meet your quibbling as to the Rosback box, which, according to the collective disclosures of the Rosback patents, is intended always to have side material extending integrally over the box corners, I will revise the definition which I presented in X Q. 62 as follows: Do you find in the prior art any single patent [fol. 837] which shows a completed box comprising four preformed side sheets "totally separated" from each other at the box corners, each equipped with two separate cleats, the box being encircled by wires (as distinguished from strips), the wires being attached by straddling staples which pass through the sheets and anchor in the cleats—and please disregard the relationship between adjacent edges of the sheets, i. e., whether or not they overlap?

A. The "totally separated" limitation distinguishes, however immaterial the distinction may be, from the Rosback structures, and accordingly I will answer the question that I do not find just such a specific box in all the details recited. Defendant's box in this suit—I refer to the completed box—has this distinction from the box described in X Q. 64: When the box defined by the question, as I understand it, is completed, all the staples pass through the side sheets and into the cleats. In defendant's box the staples on two of the sides pass through the side sheets and are clinched on the under side, this difference resulting from the fact that defendant employs a radically different blank and a radically different method of constructing the box from that of the patents in suit. As I recall it, sometimes additional staples are driven through the side sheets into the cleats when the box is completed, although this is not absolutely essential in the formation of defendant's box. If plenty of additional staples are passed through the side pieces embracing the wires and into the cleats that were originally on the heads and not on the blanks, I think that this defendant's finished box is the substantial mechanical equivalent of the box described in X Q. 64, although some objection might be made to the fact that the use of the additional staples would tend to split up the end of the box somewhat, and they would probably be put in more accu-

rately in the method employed by Inwood and Lavenberg than in defendant's method.

I should say that the box marked "Plaintiffs' Exhibit B, Sample of Defendant's Box," which was before Judge Page as representing defendant's box on the motion for preliminary injunction in this suit has the "plenty of additional staples" referred to. As to whether the use of those additional staples in this box materially "split up the end of the box," as I have suggested, I note that the box referred to has nine splits at the points where the staples are inserted on the original non-cleated sides of the blank, as well as three other splits at points apart from the staples. Whether or not these three other splits occurred during the [fol. 838] driving of the staples, I could not say. How material these splits are I will have to leave to somebody who uses the boxes practically, although it seems that they ought to stand a good deal of grief as they are. The additional staples in this exhibit box presumably are put in accurately enough, for all practical purposes. I think this particular box is the substantial mechanical equivalent of the box described in X Q. 64. So far as I can tell from the drawings of the Inwood and Lavenberg reissued patent, the box shown in Fig. 2 of the drawings is the substantial mechanical equivalent of the box described in X Q. 64, although as I recall it there is no description of the box in the reissued patent in suit. If the box shown in this patent is built as I presume it is or would be, I should say that the Exhibit Defendant's Box is the substantial mechanical equivalent of the box shown in Fig. 2 of the reissued patent.

Assuming that the party skilled in the art was familiar with the teachings of the Rosback prior art patents, I should say that the Inwood and Lavenberg reissued patent contains sufficient instructions to enable him to make a wirebound box such as shown in Fig. 2 of the patent.

Defining the term "box blank" in this wirebound box art, a blank consists of side pieces with the wires attached thereto before the box is finally formed and the ends put in place, assuming that ends are employed. That art has developed seemingly on two lines, one in which the blank is full cleated, as in the Rosback patents and in the Inwood and Lavenberg patent, and there is also the cleatless blank, as exemplified in the Averill patent 661,481, and in the

Greenstreet patents 547,486 and 722,423. Defendant's blank is a sort of a cross, as it were, between these two types since it is semi-cleated, i. e., half of the cleats are placed on the blank, and the other half are placed on the heads before the box is assembled.

X Q. 75. Where do you find the expression "box blank" employed in any patent prior to the Inwood and Lavenberg patents in suit?

A. Without stopping for a chronological arrangement, I note in the Knudtson & Uhri patent No. 518,038, dated April 10, 1894, the patent is entitled a "Machine for Making Box Blanks," and I note in the brief description of Fig. 65 it is described as "a broken perspective view of one of the box blanks which the machine is designed to manufacture." It seems useless to look further in this patent as the same pharse is doubtless employed.

X Q. 76. Let me interrupt you long enough to ask you if the box blank disclosed by this Knudtson and Uhri patent is substantially identical with what you have re- [fol. 839] ferred to in your earlier testimony as the Rosback blank?

A. Yes, except that I note that the ends of the cleats seem to be merely beveled and not step-mitered.

(The witness continues his answer to X Q. 75.)

The Rosback patent 608,796 is entitled a "Machine for Making Box Blanks," and in the brief description of Figs. 35 and 36 they are said to be "a plan view and a side elevation, respectively, of a completed blank, showing by dotted lines the step-mitered cuts"; and I have no doubt that a perusal of the full specification would show many places where the term "box blank" is used as defining the product of the machine.

X Q. 77. Let me interrupt you again. The instances you have given sufficiently illustrate the use of the expression "box blanks" in connection with blanks of the Rossback type. Where do you find that same expression used in connection with other types of blanks?

A. I note as a matter of information that the Walker patents 763,579 and 767,613 which disclose similar structures call them "folding crates" or "knock down crates." The Healy patent 768,123 to which I have heretofore referred in this cross-examination describes the device as "a

folding box or crate." From a hasty examination of the other box patents I have discussed, I do not find the phrase "box blank" employed therein.

I have no knowledge of the practical usage of the expression "box blank" as it developed in connection with the Rosback and other boxes in connection with this particular type of box. I have had more or less to do with patents on folding boxes made of cardboard, and I know that the phrase "box blank" has been used in connection with folding boxes of the paper or cardboard variety for at least twenty-five years. While I do not know it as a fact, I suspect that the phrase "box blank" in the folding box art originated because the boxes or blanks are cut by a blanking die, as they call it, and for that reason they call them blanks, the same as you speak of blanks in sheet metal and other stuff that is stamped up.

With reference to wooden boxes, it is true that so far as I can judge from the patents which I have examined relating to wooden boxes wired in one way or another, the expression "box blank" as applied to such structures came into use in connection with boxes of the Rosback type and was thereafter used in connection with the Inwood and Lavenberg patents.

X Q. 80. I have asked these recent questions in order to arrive at a definition of terms which I propose to use. Let us assume, then, that "box blank" in my next following [fol. 840] questions, and until further notice, refers to blanks comprising cleats, sheets and wires connected together by staples straddling the wires and passing through sheet material and into cleat material where cleats are present.

With this definition in mind, I ask you to consider an expression which you used in your direct testimony, namely, "after the box blank has ceased to be a blank and has lost its identity as such the finished or completed box." When is it that the blank ceases to be a blank?

A. When it is folded around and nailed to the heads.

I should say that the nailing of the blank to the heads or some similar operation would be an essential step prerequisite to the blank's losing its identity as a blank if it is to be a permanent box, as otherwise the box might be readily knocked down, when it would once more become a blank rather than a part of a completed box. Aside from

nailing to the heads, which might destroy the identity of the blank as such, by "similar operation" I have in mind that screws or staples might be used instead of nails, and it might be that the heads could be dove tailed in place, although I would want to think about that a little before I included that certainty. What I had in mind was a connection between the heads and the blank which would prevent its readily being knocked down after it had once been assembled as a box.

X Q. 83. Then as I understand you, the box blank ceases to be a blank and loses its identity in the finished box, only when heads are so securely incorporated in some manner with the parts of the blanks as to hold them together in box form. Is that correct?

A. As I recall one of your earlier questions, it related to the permanency of the box structure, and obviously if a box made of a blank and heads can be knocked down so that the heads are separated from the blank and the latter can be spread out in its original shape, it once more becomes a blank, although it had been a part of a box.

X Q. 84. In other words starting with a blank, if it is combined with box heads in box form, it ceases to be a blank; but if thereafter the heads are removed the blank resumes its blank character.

A. If it were properly knocked down, that would be true. By "properly knocked down" I mean detached from the heads and flattened out so that it resumes its original form and is in shape so that it can be used again as the basis of a box, if desired.

As a general proposition, I should think that it is essen- [fol. 841] tial that the blank, having been once a part of a finished box and having been then separated from the heads, be flattened out before it resumes its character as a blank. I had in mind the statement of some of the patents that the blanks can be folded up and used as boxes without employing any heads, and I take it if the cleats were deep enough and strongly enough fastened to the side pieces, more especially if the ends interlocked, that the boxes thus formed without complete heads might be used for shipping packaged materials that fitted properly into the box.

X Q. 87. Then as I understand you, and referring particularly to the example you have just cited, if the blank of

the Inwood and Lavenberg reissued patent were folded in four sided form, but without the attachment of any heads, it would cease to be a blank and be a box. Is that correct?

A. It would be a sort of a box, and the kind of a box that seems to have been contemplated by the Inwood and Lavenberg method patent.

X Q. 88. Would it have ceased to be a blank?

A. If it were folded up and filled with material for shipment and the ends of the wires twisted together, it would be a sort of a box, although it is a fact that it could be very readily turned back into a blank by untwisting the wires and flattening it out. Those seem to be the facts, whatever you call it.

X Q. 89. It must be obvious to you that you have not answered my question. You have yourself volunteered the expression "after the box blank has ceased to be a blank." I cannot find that anyone else has ever used such an expression and I am trying to find out what you mean by it. I ask you a very simple question, whether if the Inwood and Lavenberg blank be folded in four sided box form, without attachment of any heads, it thereupon ceases to be a blank and loses its identity as a blank?

A. If it is never knocked down again, it certainly loses its identity as a blank permanently. If, however, it is knocked down, the loss of identity is only temporary.

X Q. 90. But it does cease to be a blank during the interval while it remains in four sided box form?

A. That is the way I have looked at it, and understanding, of course, that it is used as a box.

X Q. 91. After the Inwood and Lavenberg blank has been folded into four sided box form it must then be used as a box, to destroy its identity as a blank. Is that what you mean?

[fol. 842] A. As I recall the language of the Inwood and Lavenberg method patent—

X Q. 92. I interrupt you to say that I am trying to ascertain the meaning of an expression which you yourself have coined. I want the meaning which you yourself ascribe to it.

A. If it has been folded up and packed and the ends of the wires twisted together so that it is ready for shipment, I don't see how you can call it a blank because it is then a

box. On the other hand when it has arrived at its destination and been opened up and the contents removed and flattened out into its original form, it certainly reverts to its original condition of being a blank. Of course the assumption that you dispense with the heads ordinarily used in connection with these blanks in making a box, tends to confuse the matter a little, a fact which I take does not worry you any.

X Q. 93. The very unusual condition of an Inwood and Lavenberg blank made into four sided box form and employed as a box without the use of heads, was one which you suggested yourself in your direct testimony and to which you devoted several pages of discussion. Although I recognize the quite unusual character of such a box, I desire to find out, if I can, some of the things you had in mind with reference to it.

Let us start with an Inwood and Lavenberg blank. We fold it into four sided box form. We load it, for example with a can snugly fitting the interior of the box, but using no heads to the box. Then we twist the ends of the wire together to complete the continuity of the wire binding around the finished package.

At what point in the history which I have just narrated, does the blank cease to be a blank within the meaning of the expression which you originated?

A. In this case I should say it was when the ends of the wire were twisted or otherwise secured together.

X Q. 94. Considering the same history which I narrated in my last question, but omitting the step of loading the box, would the twisting of the wires mark the point at which the blank ceased to be a blank?

A. That would be my idea.

X Q. 95. Suppose we start again with an Inwood and Lavenberg blank, and fold it into box form and simply hook the wires together—for instance in order to deliver the box in that condition to a customer. Would the blank, under those circumstances, have ceased to be a blank?

A. Your supposition strikes me as being absurd because [fol. 843] the natural way to deliver blanks is flat. The way you suggest would take up too much space.

X Q. 96. Then, to interrupt you, you are assuming that

the delivery of the article which I have described would be the delivery of a blank and not of a box, is that correct?

A. If you delivered it knocked down it certainly would be a blank and not a box.

X Q. 97. I distinctly described the blank as having been folded into box form, and the wires slightly hooked, say with a single twist, to hold the blank in box form. Under those circumstances, would the blank have ceased to be a blank?

A. If the wires were fastened together securely enough so as to hold it in box form, it would be a box temporarily at any rate, although of course it could easily be converted back into blank stage.

X Q. 98. But I ask you whether it would have ceased to be a blank. Please answer that question without evasion. You coined the expression, and you certainly ought to know what you mean by it.

A. Temporarily, yes.

X Q. 99. But if you did not twist the wires together it would not have ceased to be a blank, is that correct?

A. In that case it would fall down and become a blank, assuming that it was constructed as shown in the patent in suit, with step-mitered joints.

X Q. 100. Instead of twisting the wires together after the Inwood and Lavenberg blank has been folded in box form, let us drive a small brad through one cleat end into an adjacent cleat end at the meeting extremes of the blank, so as to hold the structure at least temporarily in box form. Under those circumstances would the blank have ceased to be a blank?

A. That is another foolish supposition, as nobody would ever go to the trouble of using brads when they could twist or hook the ends of the wires together, and nobody would ever think of shipping the blank in that shape. If it was shipped as a blank, it might be called a blank shipped in box form, but all this strikes me as being about as puerile as possible.

X Q. 101. Of course you have evaded answering my question. You said a while ago that if the Inwood blank were folded into four sided box form and the wires were then twisted together securely—the blank would then have ceased to be a blank. If the wires were then untwisted and

the blank flattened out, would it then have become a blank again?

[fol. 844] A. Surely.

X Q. 102. At exactly what point in that process of untwisting the wire and flattening out the blank, would the blank have been resurrected, so to speak?

A. It would not be so much a resurrection as a change of faith. When it was flattened out.

X Q. 103. You have said that after the Inwood and Lavenberg blank had been folded in four sided box form, but before the wires had been twisted together, it remained a blank. Now after twisting together and then untwisting the wires, why should it be necessary to flatten the blank out in order to make it resume its character as a blank?

A. We ordinarily think of a blank as something that is flat, and when we start with a flat blank, one would not consider it to be a box until it had been placed in condition into which it would not flatten out again if left to itself. In the reverse process, starting with a box, it seems natural to conclude that it was not a blank until it was flattened out and became a blank in the ordinary use of the term.

X Q. 104. Then after the Inwood and Lavenberg blank has been folded into four sided box form and while it retains that condition before twisting the wires together, it remains a blank. When the wires are twisted together, it ceases to be a blank. But when the wires are untwisted again, leaving the box in exactly the condition which it had before it ceased to be a blank in the first instance, it nevertheless does not resume its character as a blank until it is flattened out again, is that a correct statement of your idea?

A. Your cross-examination has shown that it is very difficult to make an exact line of demarcation between a blank and a box, and I have endeavored to do so to the best of my ability, and your question correctly states my answers to some of your suppositions.

X Q. 105. Refer again to your statement that the Inwood and Lavenberg blank folded into four sided box form but with the wires untwisted is still a blank; but ceases to be a blank when the wires are securely twisted. This means that the only change in structure which has taken place in destroying the identity of the blank in that

change which is confined to the twisting of the wires. That's correct, is it not?

A. Remembering that the blank was originally flat, and that it has to be folded before the ends of the wires can be twisted together, this seems to take in the entire metamorphosis.

[fol. 845] X Q. 106. When the exact Inwood and Lavenberg blank is folded into four-sided box form, but without twisting the wires together, and while, as you say, the blank remains a blank—is the structure in that condition correctly described by claim 1 of the Inwood and Lavenberg reissued patent?

A. Yes.

X Q. 107. Suppose we start with separate side sheets and separate cleats preformed exactly as illustrated in the Inwood and Lavenberg patent, and we assemble one side sheet with a pair of cleats and secure wire to the assembled single section, in the manner shown in the patent. Assume that this section just referred to is for the top of of the box. Then we take the side sheet alone, intended for the rear side of the box and we secure that to the same wires in proper relation to the side sheet for the box top. Then to these same wires we secure a side sheet and also its pair of cleats, intended for the bottom of the box. Then to supply the front side of the box we secure to these same wires an uncleated side sheet.

At this stage we have four sections, alternate sections being cleated and the intervening sections being uncleated. Assume that the wires are secured to the cleated sections just as indicated in the Inwood and Lavenberg reissued patent; and that the wires are secured to the uncleated sections in the same relationship and by sufficient staples to hold them in the assembly.

Thereafter, and while the assembly remains in the flat, we secure cleats to the previously uncleated sections by means of staples straddling the wires, passing through the side sheets and anchored in these new cleats.

In other words, my procedure has produced a four-section blank, each section having its cleats and the four being wired together as indicated in the reissued patent.

Is this resulting structure accurately described by claim 1 of the reissued patent?

A. Provided that the sheets and cleats have the relationship set out in the claim 1, I see no reason why that should not be so.

X Q. 108. Start again at an intermediate point in the procedure which I have described, i. e., with the four-section blanks having alternate sides, including the top, provided with cleats, and the intervening sides cleatless. My previous procedure applied cleats to the uncleated sides while the blank remained in the flat.

Instead of that, I now fold the endmost uncleated side (intended for the front side of the box) against a form holding a pair of cleats, the front side then standing at a right [fol. 846] angle to its adjacent side (the bottom). I then secure the upwardly folded front side to these cleats.

After I follow the same procedure with the uncleated rear side sheets, bending it to right angles with the bottom sheet and thereupon secure two cleats to it.

Assume that in securing the front and rear sides to the cleats, I do so by means of staples which straddle the wires, pass through the sheets and anchor in the new cleats.

The structure I have formed by this procedure then stands with the bottom sheet horizontal the front and rear sheets folded to vertical positions, and I assume the top sheet to hang back in the form of an open lid.

Is the structure resulting from the procedure which I have described accurately defined in claim 1 of the Inwood and Lavenberg reissued patent?

A. That might be a question, inasmuch as the final clause, "whereby when folded at a right angle the end of one sheet overlaps the end of the adjacent sheet," would seem to imply that the blank was flat and was to be folded in the future. However, if the pairs of cleats last attached were not connected to the form so that the front and rear sides could still be flattened out so that the completed blank was in the flat, I would be inclined to say that it was defined or described by claim 1, always assuming that the sheets and cleats have the exact relationship set out in the claim.

X Q. 109. Suppose this same structure, being retained with the front and rear newly cleated sections in their vertical positions, were then supplied with ends or heads secured to the inner sides of the cleats. Would this resulting structure be the mechanical equivalent of the com-

pleted box illustrated in Fig. 2 of the drawings of the Inwood and Lavenberg reissued patent?

A. It might be mechanical equivalent of the completed box, yes.

X Q. 110. But in your view, the simple insertion of the ends in the structure referred to would then destroy the identity of the blank and would remove it from the description contained in claim 1 of the reissued patent. Is that correct?

A. Certainly, because it is then no longer a blank, but is a box.

X Q. 111. But if we now remove these ends, leaving the four-sided structure in its previous condition, then the parts resume their character as a blank and are again within the description in claim 1 of the reissued patent. Is that correct?

[fol. 847] A. I understood that your ends were fastened to the cleats when I answered the previous question. Barring the uncertainty of the final clause of claim 1, and assuming that the ends have been detached so that the sheets and cleats could be flattened out to make a true blank again, I will answer it affirmatively.

X Q. 112. Please consider the Exhibit B, Sample of Defendant's Box, to which we have already referred. You observe, do you not, that the ends are secured to the cleats of the front and rear sections by staples?

A. Yes.

X Q. 113. If those ends are removed and the blank is flattened out into a four-sided eight-cleated structure, is the result within the description of claim 1 of the reissued patent; if not, why not?

By Mr. Cox: Defendant's counsel asks plaintiffs' counsel how it can be flattened out into a four-sided, eight-cleated structure?

By Mr. Janney: By removing the ends, with the assistance of a hammer.

A. I will ask you to remove the ends and then I will try to answer the question.

By Mr. Janney: It is noted that, as requested by the witness, the ends of the box have been removed and the resulting blank has been flattened.

It is noted also that the box so treated was Plaintiffs' Exhibit B, which was before Judge Page on plaintiffs' motion for preliminary injunction in this suit.

A. No, because the "cleats secured to said sheets" do not "terminate short of edges of the latter a distance equal, or approximately equal, to the thickness of a sheet."

X Q. 114. Is there any other reason?

A. I do not recall now whether the final clause of the claim applies or not.

My understanding of the utility of the structural feature expressed in the final clause of claim 1 of the Inwood and Lavenberg reissued patent, namely, "whereby when folded at a right angle the end of one piece overlaps the end of an adjacent piece," is that theoretically this produces a box which is tight at the corners, as distinguished from one in which the edges do not overlap, and there would be at least an open line along the corner. Judging from the samples of these veneer boxes that I have seen, there is pretty apt to be at least an open line despite the overlap, due to the warping and contraction of the veneer side pieces. As another utility or advantage of the result described in the quoted clause, with the specific construc-[fol. 848] tion carefully set out in the reissued patent, which specific structure I may note that defendant does not employ, the biting in of the wires at the corner, as indicated in dotted lines in Figure 4 of the patent in suit is produced in a manner that would not occur if the edges did not overlap. I should say that there is very little utility of that biting in of the wire, if tongue and groove cleats are employed, such as defendant uses, but it may be considerable if the step-mitered joint shown in the patent in suit are used, as it would tend to prevent the longitudinal movement of one side relative to the other in case the boxes were stressed so as to tend to produce such a movement. The overlapping of edges referred to and the tensioning of the wire which results therefrom contribute at least some theoretical advantage to the finished box of the specific box shown in the Inwood and Lavenberg reissued patent in suit. The final clause of claim 1 of the Inwood and Lavenberg reissued patent could only occur in the finished box and would not occur when the blank was left flat. The ultimate result indicated in the claim and to which the structure defined in the claim is presumably directed, is the

PLAINTIFFS' DIAGRAMS: SHEET 1.

result in a finished box. The box blank, in the flat, in the Inwood & Lavenberg reissued patent might have some utility for a bonfire or kindling wood. Outside of that I see no particular utility, if you can call that utility.

X Q. 122. Then it is true that the sole practical utility and the only intended object of the box blank shown in the flat in the reissued patent, is the production of a finished box, which is characterized by the result referred to in the final clause of claim 1 of the reissued patent?

A. Before answering the question affirmatively I will have to explain that I understand from the method patent at any rate that this box is sometimes employed without any heads or ends, as previously mentioned in the cross-examination. All the utility which you have so far mentioned would inhere in a box made up from this blank without the use of any ends or heads. If you definition of a finished box is broad enough to include the blank folded up and the wires twisted together without employing any ends or heads I will answer the question affirmatively. I might say that I think that this alleged advantage would have more utility in the box without the heads than it would if the heads or ends were actually employed, as it would tend to strengthen the box at the ends and thus take some of the strain carried by the heads alone in an ordinary construction.

X Q. 123. I gather then that in your opinion the objec- [fol. 849] tive and the ultimate utility of the invention described in the Inwood & Lavenberg patent resides in a finished box characterized by the result expressed in the final clause of claim 1 of the reissued patent? With the explanation given in your next preceding answer and assuming that my expression "finished box" embraces endless as well as ended boxes, do you answer this question in the affirmative?

A. Yes, understanding that it is directed to the specific structure disclosed in the reissue patent in suit.

(Here follows Plaintiffs' Diagram, sheet 1, side folio 849½.)

X Q. 124. I hand you a drawing which I have marked "Plaintiff's Diagrams, Sheet 1." Please consider this to be an end elevation of a box, the end here shown being duplicated at the opposite end of the box. Also assume that the indicated staples straddle the wires, pass through

the side sheets and are anchored in the cleat. No ends are included in this box. Does this fairly represent the box referred to in your answer to X Q. 94 where you said that in the condition here represented, with the wires twisted together as shown at the upper right-hand corner of the diagram, the original blank would have ceased to be a blank?

A. No, I was talking about the Inwood & Lavenberg box, and in this diagram the wires do not bite into the corners of the box as shown in Figure 4 of the Inwood & Lavenberg reissued patent in suit.

X Q. 125. If the wires in the diagram were shown as biting into the box corners would you then answer that the blank had ceased to be a blank in this sheet 1 construction?

A. With the change noted, and as I understand the original question, that is correct.

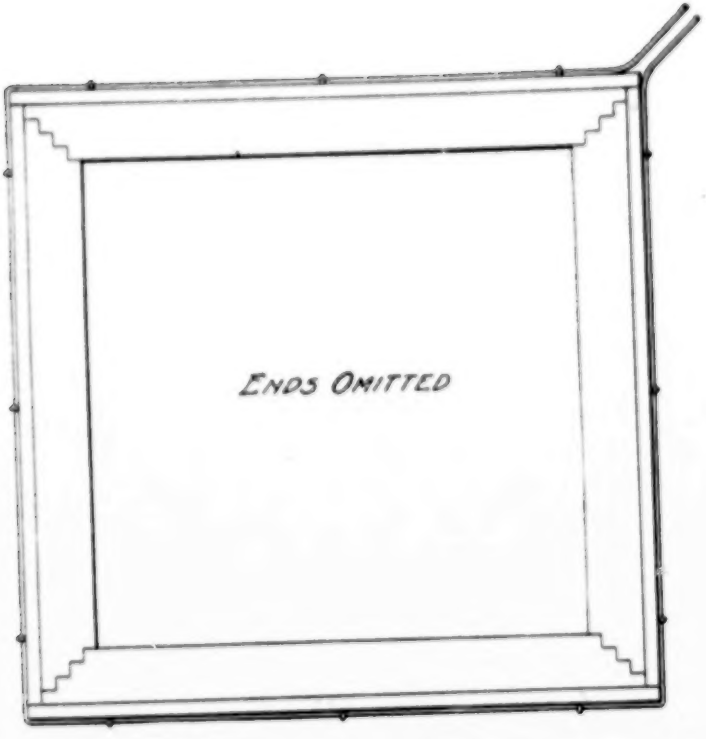
Assuming that the box shown in plaintiff's diagram sheet 1 was made from a flat blank, I would say that in the exact condition shown in sheet 1, it would have ceased to be a blank, although it would be entirely possible to untwist the wires and unfold it into blank form again. The exact structure shown in plaintiff's diagrams, sheet 1, would not correspond to the description of claim 1 of the Inwood & Lavenberg reissued patent. I have already pointed out that the wires do not cut into the corner, and that furthermore it is not now a "box blank" as defined in the claim, but is a box.

X Q. 128. Does the description of claim 1 of the reissued patent include a description of the cutting in of the wires at the box corners?

A. It includes a description of the structure which when folded as defined in the final functional clause of the claim [fol. 850] would result in the wires cutting into the corners.

X Q. 129. Then the claim in its literal terms does not refer to the cutting in of the wires, but you read this latter into the claim by inference. Is that correct?

A. You may put it that way. In employing this inference I of course have in mind the fact that complainants read it into the claim in the original litigation on this patent in order to find some excuse for urging that it showed a novel and patentable device.



PLAINTIFFS' DIAGRAMS: SHEET 2.

If the sheet 1 construction showed the wires cutting into the corners of the box, the structure would not correspond to the description in claim 1 of the reissued patent. I have already pointed out that the drawing showed a box and that the claim calls for a box blank.

(Here follows Plaintiffs' Diagram, sheet 2, side folio 850½.)

X Q. 131. Please refer to another drawing marked "Plaintiff's Diagrams, Sheet 2." This represents exactly the same structure shown in "Plaintiff's Diagram, Sheet 1," to which we have referred, with the exception that the ends of the wires are not twisted together but are left disconnected. Is this sheet 2 structure a box or a blank?

A. I would call it a blank, understanding that it has no heads, and that the cleats are not secured together but are only placed in juxtaposition as indicated.

X Q. 132. If the wires in sheet 2 were shown as cutting into the box corners, would this sheet 2 construction respond to the description in claim 1 of the Inwood & Lavenberg reissued patent?

A. If they cut in in the manner and for the reason indicated in Figure 4 of the reissued patent in suit I should say so.

X Q. 133. Assuming this same cutting in of the wires at the box corners in both the sheet 1 and sheet 2 construction—you say then that the sheet 1 construction would not respond to claim 1 of the reissue; and sheet 2 would respond. That is correct?

A. Yes.

The sole difference between the sheet 1 and sheet 2 construction is in the twisting of the wires in the first case and not in the second case. It is not my opinion that the difference between infringement and non-infringement of claim 1 of the reissue patent may depend upon the sole circumstance that the wires are or are not twisted together. In drawing a distinction between the box and the box blank where you have the specific structure of the Inwood & Lavenberg reissued patent in suit, it might come to this point, but in drawing a distinction between the blank employed by defendant and defendant's box or the box of the patent in [fol. 851] suit, the distinction becomes very material. If you folded up defendant's blank without any heads in the manner shown in the two drawings which we have been

discussing it would not stay in the box form, but would collapse. The two structures, considered as box blanks, are radically different, and you cannot evade that fact, although you do try to mislead the court by making pictures of your own specific box.

X Q. 136. When you say that, assuming the cutting in of the wires, the sheet 1 construction does not respond to claim 1 of the reissue while the sheet 2 construction does respond; and when obviously the only difference between the two is in the twisting of the wires in the one case, then in this particular instance at least the difference between infringement and non-infringement would depend solely upon whether the wires were twisted or not?

A. Not at all. The manufacturer of the box of sheet 1 would necessarily have infringed the patent in making the blank of sheet 2.

Assuming a box user who has purchased a collection of these blanks from a manufacturer, if he sold one of those blanks in the flat, he too would be an infringer. He would also be an infringer if he made one of the boxes, because he would then be using the blank for the purpose for which it was made.

X Q. 138. If this user placed ends in the box to make a finished headed box, he would then be an infringer because he had used the blank. Is that correct?

A. If it were the specific blank shown in the Inwood & Lavenberg reissue patent in suit which he employed in making the box, that would be so.

X Q. 139. If the manufacturer using identically the specific blank of the Inwood & Lavenberg patent folded that blank, supplying it with ends, and made exactly the box shown in Figure 2 of the Inwood & Lavenberg reissued patent, and then sold those boxes, that purchaser, as I understand your position, might freely resell that completed box without infringing the reissued patent.

A. That would seem to be a question of whether or not the manufacturer was a licensee or owner of the Inwood & Lavenberg patent. If the manufacturer paid the expected tribute, you cannot expect the user to pay an additional tribute. The manufacturer would clearly infringe in making or using the blank, and after he had paid his tribute, you certainly cannot go on indefinitely collecting

tribute from successive parties, even assuming that the patent covered the box and not merely the blank.

X Q. 140. Of course you have entirely evaded my ques-[fol. 852] tion. Assume an unlicensed manufacturer who makes identically the blank of the Inwood & Lavenberg patent and who is therefore an infringer, as you have just stated. This unlicensed manufacturer using the same blanks folds them, provides them with permanent ends, and thereby produces identically the box shown in Figure 2 of the Inwood & Lavenberg reissue. He then sells this finished box.

Can the purchaser of that box from the infringing manufacturer freely sell that box without fear of infringing the Inwood & Lavenberg reissued patent?

A. Not knowing whether this particular question arose in the litigation already had upon this patent and which went to the Court of Appeals, I cannot say—

X Q. 141. Let me interrupt you. I am not asking you at all what has been adjudicated. I am asking for your own opinion.

A. Your question did not indicate that, and naturally I had in mind that the chances were, especially in the Chicago Mill & Lumber Co. case, that the defendant therein manufactured and sold the blanks as such, and thereby infringed the patent for that reason. If you want a statement from me as to what I would do as judge under the condition indicated in the question, I would say that the interests of justice demanded that you sue the unlicensed manufacturer and not bother with small-fry users of the boxes.

X Q. 142. You have again deliberately evaded my question. At one time you practiced as a patent lawyer, did you not?

A. I have been admitted to the bar and have conducted some interference litigation for clients, and back in the years 1897 to 1901 while I was a member of the firm of Coburn, Hibben & McElroy, as I recall it, I conducted a few infringement suits.

X Q. 143. Do you consider yourself qualified to undertake a discussion of the questions of infringement, which you did in fact discuss in your original affidavit on motion for preliminary injunction?

A. Certainly.

X Q. 144. Then please bear in mind that I am asking you to exercise your own personal qualification, not by way of general advice as to what procedure might be or ought to be adopted, but on the academic, if you please, question of infringement presented in these circumstances.

The infringing manufacturer makes the identical Inwood & Lavenberg blank. From that he makes identically the Inwood & Lavenberg box shown in Figure 2 of the reissue [fol. 853] and including permanently secured ends. He sells that box to a purchaser. May that purchaser freely sell the box without infringement of the Inwood & Lavenberg reissue?

To avoid a further quibble, please assume that the above described circumstances occurred prior to the expiration of the reissue patent.

A. I thought I had indicated my view in my answer to X Q 141, which I will amplify by saying that in the extremely unlikely circumstance that any such litigation would ever be brought, I would find non-infringement of the patent and tell you to go and sue the unlicensed manufacturer who had infringed the patent and who was unquestionably the proper party to sue, because you would then stop the infringement at the source.

X Q. 144*a*. Let us see how your sense of justice would operate under these circumstances. Assume that in the Dominion of Canada there is no patent on the Inwood & Lavenberg blank or box. A manufacturer in Hamilton, Ontario, manufactures exactly the Inwood & Lavenberg blank from which he makes exactly the Inwood and Lavenberg box of Figure 2 of the reissued patent, providing it with attached ends. He then sells and ships those boxes to a purchaser in Detroit, Mich.

In Detroit this purchaser sells those identical Inwood & Lavenberg boxes in direct competition with licensees under the Inwood & Lavenberg reissued patent.

Again assuming that these circumstances arose prior to the expiration of the reissued patent—might that purchaser in Detroit sell the identical Inwood & Lavenberg box without infringement of the Inwood & Lavenberg patent?

A. As a patent judge considering it as a matter of patent law, I would again have to dismiss the bill and advise you to employ a solicitor the next time who would draw a claim that would cover the box as well as the blank. I fancy, however, that the solicitor thought that the protection would be stronger if it was based on the blank, but I see no reason why he could not have drawn a claim to the box as well as to the blank.

X Q. 146. Assuming that the same Detroit purchaser, having obtained the identical Inwood and Lavenberg boxes, as I have described, desired to ship a great number of them to a user in Chicago, and with that in view he removes the ends from the boxes and flattens out the blanks for convenience in shipping, would he have committed an act of infringement in flattening out those blanks?

[fol. 854] A. Most certainly he would, and I would grant the injunction under those conditions.

X Q. 147. Suppose the Hamilton, Ontario, manufacturer, instead of producing the Inwood and Lavenberg blank, produced the alternate cleated blank, which is made by this defendant. He uses that blank in making the finished box having the lapped corners, such as were employed by this defendant prior to the preliminary injunction in this suit. He provides the finished box with ends and a complete complement of cleats according to this defendant's practice. He shipped those boxes to the Detroit manufacturer.

You have already said that the finished box, which I have just described, is the substantial mechanical equivalent of the box shown in Fig. 2 of the Inwood & Lavenberg reissued patent (see X Q. 72).

If the Detroit purchaser then desired to ship a great many of these boxes to Chicago, and for that purpose removed the end cleats of the box while leaving all eight of the cleats secured to the side pieces, and then employed these eight cleated blanks in the flat for shipment to Chicago, would he have committed an act of infringement of the Inwood & Lavenberg reissued patent?

A. I think not, for the reason that the specific blank thus produced would not have the relationship of the sheets and cleats recited in the patent in suit that would cause the

wires to bite into the corners in the manner indicated in Fig. 4 of said patent.

X Q. 148. Why not?

A. In the Inwood & Lavenberg patent, as seen in Fig. 3, the edges of the sheets practically abut, whereas in defendant's blank, as I recall it, the edges of the sheets are spaced apart by the sheet pushers a distance substantially equal to the thickness of the side sheets, so that the same deep biting of the wires into the corners could not occur.

X Q. 149. Is that the only reason that the described procedure of the Detroit purchaser would not be an infringement of the reissued patent?

A. As I understand the manipulation which you have described, and which I have assumed would be favorable to produce an infringement if possible, that is correct. I am assuming that the cleats removed from the head have been thoroughly stapled to the alternate side sheets by staples embracing the wires, passing through the side sheets and into the cleats which were originally on the heads.

X Q. 150. Then, except for the spacing apart of the [fol. 855] sheet edges to substantially the extent of the width of a side sheet, the assumed blank made by the Detroit purchaser would correspond to claim 1 of the Inwood & Lavenberg reissued patent?

A. I would say "No." I temporarily overlooked the fact that said claim provides that the cleats "terminate short of the edges of the latter," and that would not be true of the cleats originally used on the blank.

The flattened article produced by the Detroit purchaser, as described, would be a box blank, but not the specific blank of the Inwood & Lavenberg reissue patent in suit. The box-blank made by the Detroit purchaser would be substantially the same thing as the blank shown in Fig. 4 of Defendant's Exhibit A. Apparently complainants have not been utilizing their own patent.

X Q. 153. Would plaintiffs commercial blank shown in Fig. 4 of Defendant's Exhibit A be the substantial mechanical equivalent of the subject-matter of claim 1 of the reissued patent?

A. I think not. It would not tension the wires so as to

cut into the corners in the manner shown in the reissue patent in suit.

The blank shown in Fig. 3 of Defendant's Exhibit A would be the substantial equivalent of the blank shown in Fig. 4 of Defendant's Exhibit A. The blank shown in Fig. 3 of Defendant's Exhibit A would not be the substantial mechanical equivalent of the structure described in claim 1 of the reissued patent, for the same reason as set out in answer to X Q. 153. As I understand the scope and novelty of the reissue patent in suit, this Fig. 3 construction would not be an infringement of claim 1 of the reissued patent, for the same reason which persuades me to say that the blank of Fig 4 of Defendant's Exhibit A and the blank assumed to have been made by the Detroit purchaser are not infringements.

X Q. 157. But Mr. McElroy, in your original affidavit on motion for preliminary injunction, on page 22 of defendant's printed record, you said that in this same Figure 3 of Defendant's Exhibit A (which you yourself had had prepared) you illustrated the defendant's blank in the Chicago Mill & Lumber Co. case and in the National Box Co. case, and with reference to them you said:

"Consequently, with the defendant's blanks employed in those two previously litigated cases, No. 174 and No. 2422, there could be no question but what claim 1 was infringed, and the only possible defense was the invalidity of the [fol. 856] patent, which defense failed. Consequently nothing remained but to enjoin the defendants in the two prior suits."

Are we to understand that you have now changed your mind as to the infringement of claim 1 of the reissued patent by the construction shown in Fig. 3 of your own drawings, Defendant's Exhibit A?

A. No. I was talking there about the opinion and finding of the court, and not about my own.

X Q. 158. Then when you said, after describing the blanks shown in your own Figure 3, that "Consequently * * * there could be no question but what claim 1 was infringed" you did not intend to be understood as expressing your own views?

A. No, I was setting out the opinion of the court—the views of the court as I understand them from a study of the records and opinions in the other cases.

I want it understood that I do not agree with the substance of the court's decision as expressed in the sentence just quoted from my original affidavit, as in view of the limitations of the prior art and the body of the patent itself, and the claims, I am of the opinion that the patent should be construed as limited to the specific blank structure therein shown in which, when it is made into a box, the wires will be tautened by the folding step so that they will bite into the dges of the corners as shown in Fig. 4 of the reisssue patent in suit. The drawings of Figs. 3 and 4 referred to, of what I believe was originally called Exhibit A in my affidavit, show the edges of the side sheets spaced apart so far in the blank that they would not cut into the edges to the extent that occurs in the structure of the Inwood and Lavenberg patent in suit, but I am not sure that the defendant's blanks in the prior litigation, which I never saw, had their edges spaced apart as far as are indicated by Figs. 3 and 4 of the exhibit drawings, which, as I recall it, was made in accordance with cuts in the record in the prior suit, which cuts purported to illustrate defendant's blanks therein complained of, but which may not have been accurate in this one point.

X Q. 160. Then, if your own drawings, Fig. 3 of Defendant's Exhibit A, does correctly represent (as your affidavit says it does) the defendant's blanks which were twice before Judge Sanborn and once before the Court of Appeals in the earlier litigation, then you, yourself, distinctly disagreed with the decision of these courts that said blank of your Fig. 3 infringes claim 1 of the reissue patent.

[fol. 857] A. As I recall it, the case was not actually before the Court of Appeals on the merits, but simply on the question of whether if a preliminary injunction had been improvidently granted. However, the fact is that if the defendant's blanks are correctly represented in Figs. 3 and 4 of the exhibit drawings, I disagree with Judge Sanborn's opinion as to the proper scope of the claims.

On the same reasoning which leads me to disagree with Judge Sanborn in this respect, I also conclude that plain-

tiffs' commercial blanks shown in Fig. 4 of the Defendant's Exhibit A is not within what I have referred to as the "proper scope" of the Inwood and Lavenberg claim, and for the further reason that all of the cleats do not "terminate short of the edges of the latter (sheets) a distance equal or approximately equal to the thickness of the sheet," as specified in the claim.

X Q. 162. I note what you have just quoted reads "terminate short of *the* edges," etc. This word the which I have italicized does not occur in the claim.

A. No. I introduced it inadvertently.

X Q. 163. Then, as I understand it, when you used in your original affidavit the expression "there could be no question but what claim 1 was infringed" by the defendant's blank in the earlier litigation, you had no desire to give the impression that that was your opinion?

A. No, I was referring to the scope of the claim as the patent was construed by Judge Sanborn.

X Q. 164. And in fact the statement which I have just quoted is not in accordance with your own opinion?

A. It is not.

X Q. 165. To enable the court to draw its own conclusion as to the ingenuousness of the next preceding two answers, I quote here the contents of this witness' original affidavit, from which I took the excerpt just referred to, as follows:

"In Figure 3 I have illustrated the defendant's blank in both of the previous cases, i. e., the Chicago Mill & Lumber Co., No. 174, and the National Box Co., No. 2422, where it will be seen that each of the sides or sheets 2 has secured thereto the tongue and groove cleats 1ᶜ, and it will be noted that in every case the cleats are shorter than the width of the sides to which they are attached—just the thickness of the side—so that when the box is finally formed, 'the end of one sheet overlaps the end of an adjacent sheet.' Consequently, with the defendants' blanks employed in [fol. 858] these two previously litigated cases, No. 174 and No. 2422, there could be no question but what claim 1 was infringed, and the only possible defense was the invalidity of the patent, which defense failed. Consequently nothing

remained but to enjoin the defendants in the two prior suits.

"In Figure 4 I have illustrated the plaintiffs' commercial blank, where it will be seen that each of the sides or sheets 2 has secured thereto the cleats 1ᶜ which differ from the cleats in Figure 3 only in that alternate cleats 1ᶜ extend the full width of the sides or sheets to which they are attached, so that the other alternating cleats 1ᶜ have to be short at both ends."

Please verify the above quotation from your original affidavit, and state whether or not it is correct.

A. The quotation is correct, but in a preceding paragraph I note a fact that may account for an apparent discrepancy. I said:

"In Figure 1 of this drawing as illustrated, *with the thickness and size of the cleats exaggerated*, the specific blank of the Inwood & Lavenberg reissue patent in suit, where each of the sides or sheets has at the ends thereof the pair of step-mitered cleats 1, which 'terminate short of the edges of the latter' a distance equal or approximately equal to the thickness of a sheet."

I italicized the statement that the thickness and size of the cleats were exaggerated, and while I did not make the same statement with reference to Figs. 2, 3 and 4, it is obvious from the drawings that they are so exaggerated, and the chances are that they do not correctly represent the distance between the edges of the adjacent sheets, and I may have been talking about the defendants' actual blanks complained of, which I then knew to be arranged as close to each other as is contemplated by the Inwood & Lavenberg patent in suit, and if that is a fact, I would have no reason whatever to disagree with Judge Sanborn on this point, which is the one that I emphasized when the matter was brought to my attention this morning. Of course, Judge Sanborn had all the boxes and everything before him, and it is quite possible that in said boxes therein complained of the edges were relatively as close together as they are shown in the Inwood & Lavenberg reissue patent in suit, and that due to the

exaggeration of the parts in the drawings of Exhibit A, said drawings do not correctly represent the structure [fol. 859] therein complained of. You will understand that I was talking this morning about what is shown in the drawings without taking into consideration whatever the possible errors resulting from the exaggeration of the parts in making the drawings.

X Q. 166. You have just said "I may have been talking about defendant's actual blanks complained of" referring to those in the earlier litigation. A short time previously you said that you had never seen one of those blanks. Then in your next preceding answer you said of those same blanks that you then knew them "to be arranged as close to each other as is contemplated by the Inwood & Lavenberg patent in suit." What do you mean by this last statement, and what is the source of your information?

A. I could not tell you at this time without stopping to read the entire record in the old litigation which I did read at the time I made this affidavit eight months ago. I may have known precisely what defendant's structure complained of in the old cases was at that time, and probably did, but that was eight months ago, and up till the time that I took up the preparation for the present deposition, I had not thought about the matter. I did not take up the record in the old case in connection with the preparation for the present deposition, and that is the reason why I made what seems to me now to be probably a mistake in assuming that the drawings of the exhibit to the affidavit correctly represents the defendant's structure complained of in the old case.

I can't say now whether my original affidavit may have been misleading in the respects I have referred to. It all depends on what defendant's actual structure was in the prior case.

X Q. 168. Well, if you yourself don't know whether your original affidavit is misleading, how do you expect the court to arrive at the truth of your opinion or to understand the impressions which at the time you really intended to convey?

A. Well, I have an idea that if by producing the actual structure that was involved in the other case you can make anything out of this apparent contradiction you will surely do so, and the court will arrive at the facts in that way.

X Q. 169. But, Mr. McElroy, you have said that you have never seen one of the defendant's blanks involved in the earlier litigation. It is a fact, as you can readily ascertain from the record in the Chicago Mill & Lumber Co. case, for example, that the defendant's blanks in that suit were [fol. 860] formed with substantial spaces between adjacent sheet edges, those spaces being determined by sheet pushers interposed between the sheet edges. If, as you have said, you were familiar with the record in the Chicago Mill & Lumber Co. case at the time you made your original affidavit, then that fact must have been before you.

You have said also that you prepared Fig. 3 in Defendant's Exhibit A from diagrams in the records of the earlier litigation.

In view of these facts, please state whether at the time you made your original affidavit, you then understood that the Chicago Mill & Lumber Co. blank sections were "arranged as close to each other as is contemplated by the Inwood & Lavenberg patent in suit."

A. I will say frankly that at this time, eight months afterwards, I have no definite recollection in the matter, and can only judge from the face of the affidavit itself. I do recollect very definitely before the court the fact that defendant's blank in this case was substantially different in the matter of the omission of the cleats from the blanks "of the Lavenberg reissue patent in suit" as well as from the defendant's blank in prior suits. I before noted the fact that the exhibit drawings were not exactly to scale, and I do not recollect now whether I overlooked the fact (if it is a fact that the defendant's blanks in the prior suits were spaced apart a distance equal to the thickness of the side sheets), so that there would not be the same biting action of the wires into the corners of the boxes, or whether I did not consider that fact to be of any importance.

X Q. 170. When you say that said sections are "arranged as close to each other as is contemplated by the Inwood & Lavenberg patent in suit' what do you mean by that? How close together must they be, or how far apart may they be while remaining within this description?

A. I should say they should not be separated a distance greater than say one-fifth of the thickness of the veneer side sheets. Of course the closer they are together, the

greater the biting action of the wire into the corners, as illustrated in dotted lines in Figure 4.

I gather this not only from the disclosure of the Inwood & Lavenberg reissue patent, but from the disclosure of the Inwood & Lavenberg workholder patent No. 1,128,144, which shows the side sheets as assembled in the workholder with their edges in contact, as said workholder provides no means whatever for gauging the distance the edges of the [fol. 861] adjacent side sheets shall be apart, but contemplates their being placed against each other.

If the side sheets were spaced apart a distance equal to one-half of the thickness of the side sheets, you would not have the closeness "contemplated by the Inwood & Lavenberg patent in suit," if the teachings of the patent are to be carried out to their fullest extent. I think such a blank would respond to the terms of claim 1 of the Inwood & Lavenberg reissue patent to a certain extent, as in order to get completely away from the tendency to bite into the corners you would have to space the edges of the sheets apart a distance equal to the thickness of one of the sheets, and even then owing to the stiffness of the wire there would be a little tendency to bite in when it was bent over the corner.

X Q. 173. I don't know what you mean when you say "it would to a limited extent." Would the blank or not infringe claim 1 of the reissue patent if its sheet edges were spaced apart a distance equal to one-half of the thickness of the sheet?

A. Well, considered purely as a mechanical proposition, it would be utilizing partially the alleged benefit set out in the Inwood & Lavenberg reissue patent although not so completely as is possible.

X Q. 174. You haven't answered the question at all. Please reread it and answer it.

A. If it contained all the other limitations of the claim, including the eight cleats and the ends of the cleats spaced away from the edges of the sheets a distance substantially equal to the thickness of the sheets, as disclosed in the drawings of the Inwood & Lavenberg reissue patent, and if I considered that the patent was valid, I suppose as a judge I would have to find that it was infringed pro tanto.

X Q. 175. Consider Fig. 3 of your own drawing Defendant's Exhibit A. If the sheet edges in that particular blank

were spaced apart a distance equal to one-half the thickness of the sheets, would that blank respond to claim 1 of the reissue patent?

A. There is a question of course as to whether the claim requires that the cleats be secured to said sheets to terminate short of both edges of the latter inasmuch as the claim is not definite on this point. However, I think I should be inclined to hold, if I considered the patent valid, it to be infringed pro tanto.

X Q. 176. Your pro tanto doesn't mean very much does it? The claim is infringed or not, is it not, when one is [fol. 862] considering the right to injunctive relief against infringement?

A. I take it the courts will understand the circumstances under which that phrase is used. I do not recall any cases where an injunction was refused when an infringement "pro tanto" was found.

X Q. 177. Suppose now a blank exactly like the blank shown in your drawings, Fig. 3 of Defendant's Exhibit A, but having its side sheets spaced apart a distance equal to three-quarters of the thickness of a side sheet. Would that blank respond to claim 1 of the reissue patent?

A. That is coming considerably closer to the possible limit of a pro tanto infringement. If the space between the sheets was equal to their thickness, the method of tensioning the wires at the corners, which seems to have been Inwood & Lavenberg's contribution to the art, would not be practiced, theoretically. As a judge I would be very much puzzled as to what to do on this three-quarters proposition. I would probably be influenced a good deal by what seemed to be the equities of the case as disclosed by the record.

I do not now recall whether or not I ever saw a blank like that shown in Fig. 3 in which the sheets were spaced apart a distance equal to three-quarters of the thickness of the side sheets. As a practical matter, I could not say just how much the wire would be tensioned when such a blank is folded into four-sided box form. Theoretically, it must be tensioned some, and yet due to the shrinkage of wood, that tensioning might disappear entirely.

I never saw a blank precisely like that shown in Fig. 3 of my drawings and don't think anybody else ever did, because the scale is too small and the relative dimensions of the parts are distorted. I do not recall that I ever saw a blank

made upon the same scale but with greater dimensions. The thickness of the sheets seems to be one-eighth of an inch, and as I recall it, all that I ever saw were at least three-sixteenths of an inch. I do not know as a practical matter to what extent the wires would be tensioned by the folding of the blank having exactly the proportion shown in my Fig. 3; that would be too variable a quantity. It would depend upon the size of the wire, the material of which it is made and how hard it was.

X Q. 183. Have you ever made or witnessed any experiments with blanks substantially, if not exactly, like that shown in your own Figure 3, to ascertain the practical ten-[fol. 863] sioning effect from the wire resulting from the folding of the blank?

A. No experiments. I have seen the defendant's boxes herein complained of made, but the blanks of which they are composed in part are not like the blanks shown in Figure 3.

X Q. 184. If it developed as a fact, which you have never had an opportunity to observe, that the blank exactly like Figure 3 in proportion, produced when folded a very substantial tensioning of the wire and a cutting in of the wires to the extent of say three-thirty-seconds or an eighth of an inch into the box corner, would you consider that to be such tensioning as is "contemplated by the Inwood & Lavenberg reissue patent?"

A. I question whether it would be, because the tensioning apart from the stiffness of the wire, which prevents it from bending exactly at right angles, is due to the fact that the edges of the adjacent sheets are nearer together than the thickness of one of said sheets, and the tensioning in the case of the blank of Figure 3 would not be due to the specific structure and mode of operation of the Inwood & Lavenberg invention, but would be due to the stiffness of the wire.

X Q. 185. Do you mean that no matter what degree of tensioning and cutting in might be exhibited in fact upon the folding of this Figure 3 blank, that the blank would not under any circumstances respond to the claim of the reissue patent?

A. That is my understanding of the actual invention. They produced a new relationship and proportion of parts that produced a cutting in of the wire into the edges by the method and in the manner illustrated in Fig. 4 of the In-

wood & Lavenberg reissue patent, and I have been unable to find any such relationship in the prior art, and I think that the claim was intended to define such a structure and relationship that caused a tensioning of the wires for the reasons set forth. If everything else disclosed in the patent was employed, as well as the relationship and proportion of the parts that produces this novel tensioning action exists in a box-blank, I should say it contains the invention sought to be protected by the Inwood & Lavenberg reissue patent in suit.

X Q. 186. In Figure 4 of your own drawing, Defendant's Exhibit A, if the sheets there were spaced apart a distance equal to one-half of the thickness of a sheet, would that structure respond to the claim of the reissue patent?

[fol. 864] A. It would pro tanto, except that half of the cleats would not be "secured to said sheets to terminate short of the edges of the latter a distance equal or approximately equal to the thickness of a sheet."

X Q. 187. In your opinion would this difference which you have just pointed out amount to a distinction that would avoid infringement of the claim?

A. Well, that would be a question as to whether or not it was the full mechanical equivalent.

X Q. 188. That question is precisely the one which I ask you to answer according to your own opinion.

A. I am very much inclined to doubt it for the reason that the tongue and groove construction there shown will not permit any relative movement of the edges of the box at the corner, which movement would be possible in the step-mitered joint construction of the Inwood & Lavenberg reissue patent in suit, except so far as it would be opposed by the biting of the wires into one edge of the box. Still, this biting in of the wire occurs only in one of the two adjacent edges, the overlapping one, so that it would not entirely prevent the relative movement by the movement of the other edge relative to the wires, which relative movement is prevented by the tongue and groove construction, unless the box has been so mishandled that the tongues and grooves are broken.

X Q. 189. I haven't the slightest idea from this answer whether the difference inquired about in X Q. 187 and X Q. 188 would suffice to avoid infringement. Won't you please give me as nearly a "yes" or "no" answer as your

conscience would permit? I suggest that you say either "yes" or "no" and then indulge yourself in as long a discussion as you like.

A. I think it would for the reasons set out in the answer to the immediately preceding question.

If the Fig. 3 blank had its sheets spaced apart a distance equal to one-half the thickness of a sheet, and the Fig. 4 blank had its sheets spaced apart a distance equal to one-half the thickness of a sheet, seemingly these two blanks would be the substantial mechanical equivalents of each other.

X Q. 199. But you have already said that under the circumstances just described, the Fig. 4 blank would be the substantial equivalent of the structure defined in claim 1 of the reissued patent. Why would not the Fig. 3 construction just described be equally the mechanical equivalent of the structure of the claim?

A. I must have overlooked the tongue and groove connections in considering the Fig. 4 construction and noted them in considering the Fig. 3 construction.

[fol. 865] The Fig. 3 nor the Fig. 4 construction having their sheets spaced apart a distance equal to one-half the thickness of a sheet, certainly would not be the mechanical equivalent of the construction defined in the reissue claim.

X Q. 201. And hence you would say that neither would infringe claim 1 of the reissued patent?

A. Well, the amount of the tensioning of the wires there would be so small, and the fact that there could be no relative movement of the edges until the tongues and grooves were broken, would incline me to say that there is no infringement.

It is my understanding that in the earlier litigation before Judge Sanborn, the defendant departed from the exact teachings of Inwood & Lavenberg in the respect that the blanks all embodied tongue and groove cleats. It is correct that as Judge Sanborn construed the patent that departure from the exact teachings of the Inwood & Lavenberg patent did not suffice in his opinion to avoid infringement.

X Q. 204. And, as Judge Sanborn construed the patent, infringement was practiced in making the defendant's blanks employing the tongue and groove cleats, and in so relating those cleats to their respective side sheets that there was not a margin of side sheet extending beyond each end of

each cleat, although there was a projecting margin of side sheet at each corner. That is correct, is it not?

A. Understanding that you are referring to the defendant's boxes in the prior litigation, that seems to be correct.

X Q. 205. Please adopt for the moment Judge Sanborn's construction of the Inwood & Lavenberg reissued patent as we have just explained it, and state whether under that construction the blank of Fig. 4 of your drawing, Defendant's Exhibit A, would respond to claim 1 of the reissued patent if we assume that the side sheets are spaced apart a distance less than the thickness of the sheet.

A. Well, as Judge Sanborn construed it, certainly it responds.

X Q. 206. Please return to the blank assumed to have been made by the Detroit purchaser who obtained his boxes from the Canadian manufacturer as referred to in your testimony yesterday, for instance, in X Q. 147.

I am assuming that this Detroit purchaser had obtained from the Canadian manufacturer the present defendant's identical box, having the lapped corners. In order to ship a large quantity of those boxes to Chicago, he removes the [fol. 866] ends therefrom while leaving all eight cleats secured to the side sheets; and he then flattens out these blanks.

Would those blanks respond to claim 1 of the reissued patent, under Judge Sanborn's construction, which we have just been discussing, provided the side sheets were spaced apart a distance less than the thickness of the sheets?

A. The supposition is a foolish one, as commercially impractical, but if it were carried out as Judge Sanborn construed the claim, they would.

X Q. 207. Then as Judge Sanborn has construed the reissued patent, defendant's box having lapped corners and formed from defendant's alternately cleated blank, embodies in the finished box certain structural elements in a combination which infringes claim 1 of the reissued patent in suit, if and when the ends are removed from the finished box and the remaining elements are flattened out, provided the sheet edges are spaced apart a distance less than the thickness of the sheet. Is that correct?

A. I am not sure about that, as of course I have no means of knowing the line of reasoning on which Judge Sanborn

reached the conclusion that the reissued patent in suit covered a box as well as a blank. It would seem to me that if he did reach this conclusion, which I think is erroneous, it must have been about as follows:

"The patent in suit is directed to a specific form of a blank, and if the defendant has in its possession a box made from this specific form of blank, and while as a box it has ceased to be a blank, yet nevertheless the box was made by using this specific form of blank. In other words, the box was made by a novel method, which method involved the use of this particular blank. If the patent was intended to define a box that otherwise had no substantial novelty by limiting it to the novel method of manufacture, perhaps I should sustain the patent as covering boxes that were made from this specific blank."

That must have been his line of reasoning and it would not cover a box made from defendant's blank, but when you tore the box apart and produced a structure with the eight cleats on the blank, then you produced an article that the manufacturer did not contemplate, and if that could be considered an infringement, the infringer would be the man who knocked the ends out of the box and flattened it out into a blank.

I did not witness the operation of defendant's box-blank machines prior to the issuance of the temporary injunction in this suit. My original affidavit is concerned only [fol. 867] with the box patent, and I thought it would only complicate matters to bring the machine into it at that stage of the proceedings. I don't recall whether or not I was aware of the fact that defendant's machine as used prior to the preliminary injunction employed sheet pushers interposed between the sheet edges in the blank material. I know the machine does now. Any information I would have had at that time would have been second hand. I don't know how thick the side sheets were on defendant's boxes made prior to the temporary injunction. I saw some of the defendant's box blanks, but do not recall that I measured the thickness. My recollection would be that it was about three-sixteenths of an inch. If I did measure the space between one sheet edge and the next in defendant's

blanks made prior to the temporary injunction, I have forgotten about it, as this was all over eight months ago.

X Q. 212. Do you know whether or not it was the intention, in the use of defendant's machine prior to the temporary injunction, to have the sheet pushers on the machine feed chains determine the spacing between sheet edges in the blanks?

A. I had no direct knowledge of the defendant's machine or how it was intended to be used until I took up the machine patents involved in this controversy a few weeks ago.

X Q. 213. Then so far as you know defendant may have had the intention referred to in my next preceding question?

A. For any direct knowledge I may have on the subject it may have.

X Q. 214. Then if that intention was effectuated, and if the sheet pushers were less in thickness than the thickness of the sheet, the sheet edges in defendant's blank would have been spaced apart a distance less than the thickness of the sheet. Is that correct?

A. If the sheet sections fitted snugly between the sheet pushers that would have been true when the blank was made, but would not necessarily be true any considerable time afterwards, owing to the shrinkage of the wood while the wire remains of the same length.

X Q. 215. How much would be the shrinkage across the grain of a piece of three-sixteenths inch veneer, eighteen inches wide and three feet long, in one week after being made into a box blank by defendant's method?

A. I could not possibly answer that question because I do not know how much moisture there is in the blanks when they are made; neither would I know how dry it was where they were stored during the week.

[fol. 868] I do not know how long a lapse of time under the conditions in defendant's factory would be required materially to alter the spacing between the sheet edges. I have already said that I know nothing about how much moisture there is in the side sheets when the blank is made up, and that is a very vital factor. If the sheet edges in defendant's blank were spaced apart a distance less than the thickness of the sheet, the folding of the blank would not tension the wires because there are no intermediate cleats for the others to react on.

X Q. 219. Then you consider that the cleats and the reaction of the cleats of one section upon the cleats of another are essential to the wire tensioning result contemplated by the Inwood & Lavenberg patent?

A. I should say you cannot get any substantial tensioning unless your blank is full cleated because it will not stand up.

X Q. 220. Please explain just how the cleats function by way of contribution to the tensioning operation in the Inwood & Lavenberg blank, for instance.

A. The cleats stiffen up the side sheets so that the latter cannot bend and swing out of position as they would if they were omitted.

X Q. 221. As I understand you, if in Fig. 4 of the Inwood & Lavenberg reissued patent the right hand cleat were entirely omitted, you believe that the folding of the right-hand sheet 2 into the dotted line position would not produce the tensioning of the wire. Is that correct?

A. I do not think there would be any substantial tensioning of the wire because the unsupported side sheet would tend to cave in, as it were, under the strain produced on it by the pull of the wire.

In defendant's blank, if the side sheets are spaced apart less than the thickness of the sheet and the blanks are folded that way, there would be a tendency to "cave in" the uncleated section, if the blanks were not folded on the cleated end sections. Folding on the cleated end sections would prevent the "cave in" because the cleats on the end sections would then function to take the place of the missing cleats. In Fig. 4 of the Inwood & Lavenberg reissue patent, the cleat 1 prevents the "caving in" of the right hand sheet 2 when the parts are folded. It would be the tendency of the cleat 1 in the Fig. 4 construction to prevent the "caving in" and thereby contribute to the tensioning of the wire instead of permitting the pull thereon to produce the "caving in."

X Q. 222. If the caving in of the uncleated section in defendant's blank is prevented, as you have described, by the [fol. 8024] functioning of its corresponding cleat secured to the box head, why is not the wire tensioned over the corner in defendant's blank, if you started with the uncleated and the cleated side sheets spaced apart a distance less than the thickness of the sheet?

A. Because the tensioning effect does not inhere in the blank alone, as in the Inwood & Lavenberg reissued structure, but the heads have to be introduced into the combination, the two structures differing radically in this respect.

I do not mean that the introduction of the heads in defendant's box prevents the tensioning of the wires under the circumstances stated in the next preceding question. I mean that the effective tensioning of the wires does not take place in the manufacture of defendant's box until the heads are introduced, whereas in the box in the Inwood & Lavenberg reissue patent, the effective tensioning of the wires occurs when the blank is folded up even if the heads are never put in place.

X Q. 230. Do you mean that there is in defendant's box, when the sheets are spaced apart less than the thickness of the sheet, an "effective tensioning of the wires" over the box corners?

A. Provided the sheets are spaced apart by a distance substantially less than the thickness of the sheets, and provided the heads are applied before any shrinkage of the side material has occurred, I do not see how some tensioning can be avoided.

X Q. 231. How does the "effective tensioning" you have just refered to differ in character and function from the effective tensioning "contemplated by the Inwood & Lavenberg patent," to use your expression?

But before asking that question I should first ask to what extent you have investigated the character and function of this tension in defendant's boxes?

A. I have made no particular investigation on this point, and have been considering the matter simply as the necessary result of well-known physical laws applied to the theoretical conditions indicated.

X Q. 232. When you say "necessary result" do you mean that the results necessary in both the Inwood & Lavenberg blank and in defendant's blank as employed before the temporary injunction?

A. I am not prepared to say how defendant's blank was constructed before the temporary injunction if the construction shown in Fig. 2 of the exhibit drawings attached to my affidavit is incorrect. There the edges of the sheets are

spaced apart a distance that appears to be substantially [fol. 870] equal to the thickness of the sheets, so that any tensioning that might have occurred would not result from the same reason as the higher or greater tensioning that occurred with the structure of the Inwood & Lavenberg reissued patent in suit, when the edges of the sheets are substantially in contact.

X Q. 233. Do you mean that some tensioning of the wires over the box corners, regardless of the reasons therefor, would be the "necessary result" in defendant's finished box made from the blank shown in your Fig. 2 of Defendant's Exhibit A?

A. As I recall these blanks, the wires are stapled down in series of curves, as it were. In other words, the wires do not lie absolutely flat or in a straight line, as indicated in the drawings. When the wire is bent around the corner, owing to its stiffness, as compared with a fine cord, for instance, it cannot be bent exactly at right angles, so that due to this curvature, there is some pressure of the wire curving over the corners, but this is the result of a different set of factors from that which is specifically illustrated in Fig. 4 of the Inwood & Lavenberg reissued patent. This engaging of the corners of the box by the wires would occur to some extent if the edges of the sheets were spaced apart a distance substantially greater than the thickness of the sheets, and if the corner of the box were open to a considerable extent.

X Q. 234. With this explanation, do you intend to answer X Q. 233 with an affirmative or negative?

A. With the explanation, the answer is in the affirmative.

X Q. 235. In your original affidavit on motion for preliminary injunction you made the following statement:

"I have examined a number of blanks, which I am told and believe are ordinary commercial blanks produced by defendant in the regular course of manufacture, and I find that there is no such tensioning in any case."

I suppose you meant by this that while, as just stated by you in your next preceding answer, there is some tensioning over the corners of defendant's box, that this is not "such" tensioning as occurs in the Inwood & Lavenberg box. Is that correct?

A. That would seem to be the case, although it is possible that the sides referred to had shrunk so that there was no substantial engagement of the wire with the corners of the box such as would tend to cause the wires to crush into the corners. Certainly there was no tensioning in the specific [fol. 871] manner set out in the Inwood & Lavenberg reissue patent in suit, because I went on further to say that

"The distance between adjacent edges of the sheets is usually as great or greater than the thickness of the sheets, and the result is that when folded there is neither any tensioning effect nor do the edges substantially overlap, if they do at all."

X Q. 236. What did you mean by the word "usually" in your statement which you have just quoted? Did you mean that you observed instances in which your statement was not applicable?

A. After this length of time I cannot be certain, but I think that was probably what I had in mind.

X Q. 237. Then, so far as you recollect, there may have been instances in defendant's blanks in which the sheets were spaced apart less than the thickness of the sheet?

A. That may be so.

X Q. 238. What did you mean when you said, still discussing defendant's blank in your original affidavit:

"In other words, the wires are not perfectly taut, but are loose enough to prevent any tensioning when the sheets are folded into box form."

A. When I doubtless meant was that the wires between the staples nearest the edges of two adjacent sheets were curved so much that if they were capable of being stretched out perfectly straight and turned at right angles when the blank was folded, there would be enough slack, so to speak, in the wire, due to the curvature, that no tensioning could occur.

X Q. 239. By the statement just quoted did you intend to give the impression that defendant's uniform practice prior to the temporary injunction was such as to "prevent any tensioning" of the wires over the box corners?

A. Judging from the context, what I meant was that in their average practice, there was no substantial tension-

ing for the specific reason set out in the Inwood & Lavenberg reissue patent in suit.

X Q. 240. Then, when you said "to prevent any tensioning" you meant "to prevent substantial tensioning." Is that correct?

A. I should say rather that I probably had in mind that there was no tensioning for the specific reason set out in the Inwood & Lavenberg reissue patent in suit, but that [fol. 872] any tensioning that resulted was for the reasons set out in answer to X Q. 233.

X Q. 241. You did observe some tensioning effect in at least some of the defendant's blanks or boxes which you examined—regardless of the causes thereof?

A. It is too long ago, over eight months, since I saw the boxes referred to in the affidavit, for me to testify certainly from my direct recollection, so that you will have to take the affidavit substantially as it stands. My best recollection would be that the blanks when flattened out had the wires between the staples, or rather that portion of the wires which spanned the gap between the sides curved or bowed up slightly, and that when the blank was folded on the heads this curvature could not be taken out, due to the stiffness of the wires, and that as a consequence the wires engaged the corners of the boxes slightly, no matter how far the edges of the sheet were separated. This is not really a tensioning of the wires, and is certainly not a tensioning of the wires illustrated in the Inwood & Lavenberg reissued patent in suit.

While I have no definite recollection as to whether in defendant's completed boxes which I observed prior to the temporary injunction the wires at the box corners had produced indentations in the wood of the side sheets, due to the fact that the wood is usually soft the wires would make some impression on the corners even if they merely curved over them in the manner described in my answer to X Q. 233. In using the stiff wire ordinarily used, I scarcely see how that indenting of the wood could have been avoided even if the wires were quite loose. If a soft copper wire were used, which, of course, is out of the question, it might be.

X Q. 244. But your opinion is that it would be impossible to avoid that effect if you used soft iron wire, for example, no matter how loose the wire might be?

A. That is not exactly an accurate statement, because obviously you could make the wires so loose that they need not contact with the corners, but it certainly would not be good practice, as the wires are supposed to furnish a considerable portion of the strength of the box, and if you make them very loose they would not function that way.

X Q. 245. What would be the difference between the behavior of soft copper wire and soft iron wire?

A. You may have in mind a softer iron wire than I have ever seen, but ordinary copper wire is very much more flexible, so to speak, than ordinary iron wire, and you can turn it at substantially a right angle, or at any rate much [fol. 873] more nearly so than you could ordinary iron wire.

It may be the intention in the operation of defendant's machine to lay the wires substantially flat on the blank and to extend across intervals between sections as straight as can be, but the bowed effect which I have noted exists just the same. Of course, I cannot say whether defendant's machine may not be adjusted purposely to produce the bowed effect but without investigation it is my thought that it was probably due to the way the wire was fed to the staplers and a sort of indentation due to the action of the staplers.

X Q. 247. You refer to the necessary effect of the heads in defendant's box to produce the tensioning which occurs over the corners of the box. Do the flat end sheets function to contribute to this tensioning in any way except to hold in proper position and relationship the cleats which are secured to the ends?

A. You will recall that the discussion to which you referred was based on the assumption that the sheets in defendant's box-blanks were separated at their edges by a distance substantially less than the thickness of the sheets. If they had this relationship, I should say that the end sheets function as stated in the question provided the cleats are strong enough to need no assistance from the end sheets.

X Q. 248. In other words, if, under the conditions you have stated, the cleats were held in exactly the same positions, but by some other means than the particular heads, then the results would be the same, so far as the tensioning is concerned?

A. Theoretically, yes.

X Q. 249. That is to say, the cleats are the elements which directly co-act with the side sheets to produce the tensioning under the conditions you have stated.

A. Theoretically the tensioning might be said to be produced without the use of any cleats, but the veneer side sheets are so thin that unless they are reinforced by the cleats, the tensioning effect could not be practically procured.

With that explanation, my answer to X Q. 249 is in the affirmative.

X Q. 251. The Inwood & Lavenberg blank is made up of four cleated side sections wired together. That is a correct description as far as it goes, is it not?

A. Yes.

And when supplied with ends and in finished box form, each of these side sections is a side section of the box. Gen- [fol. 874] erally speaking, it is correct to refer to the side sections as such, whether that side section constitutes the part of a flat blank or is incorporated in the finished box. Generally speaking, it is correct to refer to a plurality of side sections as such, whether they constitute for the moment parts of a flat blank or are incorporated in a finished box. But according to my theory, if you apply the words "box blank" to this plurality of side sections, it ceases to be describable as a box-blank when it is incorporated in the finished box, because it has passed that transitory step in the manufacture of the box. Assuming that the blank is ultimately made up into a box, according to my theory the expression "box blank" describes a transitory condition. I believe I have said that box-blanks such as under discussion have no utility except for making boxes. I should say that every method patent is granted for and limited to a transitory condition.

X Q. 260. Then you consider the Inwood & Lavenberg reissued patent a method patent?

A. It is a sort of a cross. If it be considered as a patent for a box, I should say that it is differentiated from the prior art "by the method of manufacture."

X Q. 261. As I understand your prior testimony, if defendant's blank shown in your Fig. 2 of Defendant's Exhibit A were made up into a finished box, according to defendant's practices; and if thereafter the ends were removed from that box while leaving the eight cleats secured

to their side sheets; and this eight-cleated blank were then unfolded to the flat, the result would be substantially identical with the blank shown in Fig. 4 of Defendant's Exhibit A, Plaintiffs' Commercial Blank. Is that correct?

A. That would be true, except the excess of staples.

X Q. 262. And that resulting blank, according to Judge Sanborn's construction of the Inwood & Lavenberg reissued patent, would infringe claim 1 of the patent.

A. I do not now recall whether Judge Sanborn's decision necessitated the edges of the side sheets being close enough together to get the specific tensioning action illustrated in Fig. 4 of the Inwood & Lavenberg reissued patent. If it did not, I will answer the question affirmatively.

X Q. 263. Assuming then that this hypothetical blank made, as I have described, by knocking down defendant's box, does infringe claim 1 of the reissued patent, as con-
[fol. 875] strued by Judge Sanborn; if now defendant's box were reassembled to identically its previous condition before the ends were removed to produce the hypothetical blank—would that process of restoring defendant's box infringe claim 1 of the reissued patent as construed by Judge Sanborn?

A. If the patent had not expired, I am inclined to think, as I understand Judge Sanborn's opinion, and assuming that it was not limited to the tensioning action, it would.

X Q. 264. Then with this explanation your answer to X Q. 263 is affirmative?

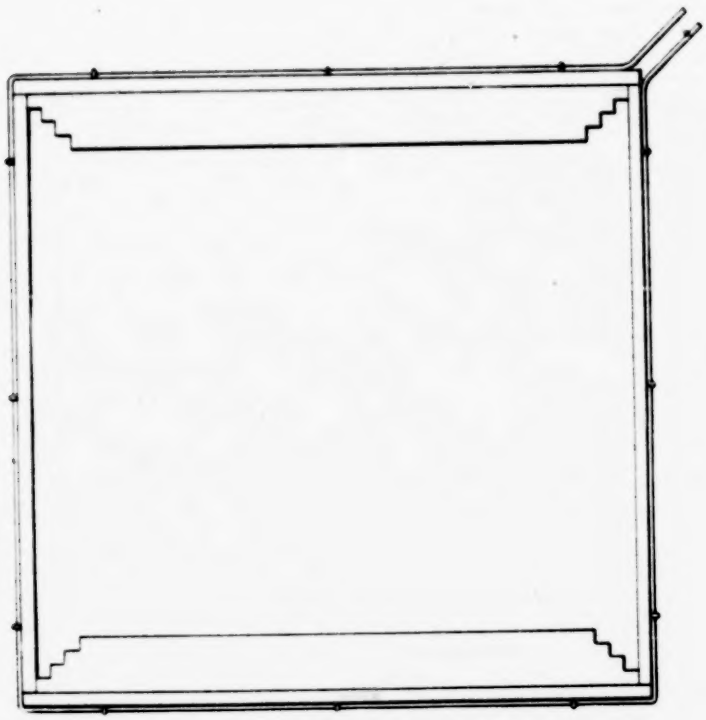
A. Yes.

Adjourned at 1 o'clock until 2:45.

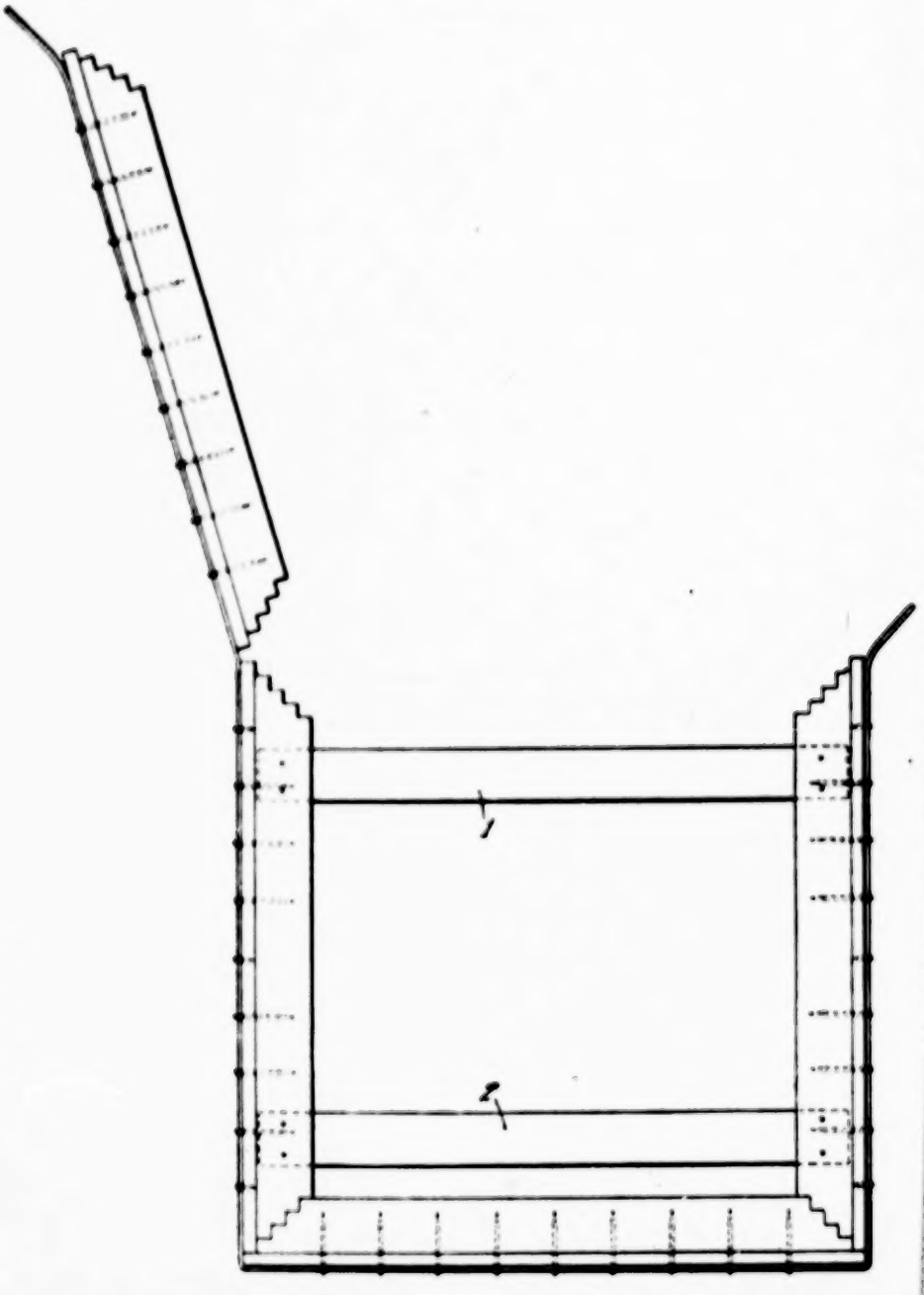
(Here follow Plaintiffs' Diagrams, sheets 3 and 4; side folios 875a and 875b.)

X Q. 265. To recapitulate for a moment, you have testified that the box shown in plaintiff's diagrams, sheet 1, the Inwood & Lavenberg blank, folded into box form, and the wires twisted together, the ends omitted, does not respond to claim 1 of the reissue patent in suit.

And you have said that the construction shown in plaintiff's diagram, sheet 2, identical with that in Fig. 1, except that the wires are not twisted, does respond to claim 1 of the reissue patent.



PLAINTIFFS' DIAGRAMS: SHEET 3.



PLAINTIFFS' DIAGRAMS: SHEET 4.

I show you now plaintiff's diagram, sheet 3, showing the same structure as sheet 2, except that the cleats for the front and rear sides of the box are omitted. I take it that in your opinion this sheet 3 construction does not respond to the claim of the reissued patent.

I am assuming that the wires in all three of these constructions cut into the box corners as contemplated in the Inwood & Lavenberg reissue patent.

A. You are correct.

Q. 266. Suppose, now, we lift the lid of the box of the sheet 3 construction and introduce other pairs of cleats at the opposite ends of the box in the manner shown in plaintiff's diagram, sheet 4, wherein I have indicated two cleats temporarily held in their intended relation by cross-pieces 1 and 2 secured to the cleats by partially driven brads. In other words, I have assembled the blank shown in sheet 3 with two additional cleats at each end, for the previously unclcated side sheets.

If, now, the front and rear sheets shown in sheet 4 be secured to the newly introduced cleats by means of staples straddling the wires passing through the sheets and into the cleats, as indicated by the dotted line staples, would the resulting structure of sheet 4 respond to claim 1 of Ltd. 8761 the Inwood & Lavenberg reissued patent, assuming that the wires cut into the box corners, as already stated?

A. So long as the cross-pieces 1 and 2 are left secured to the cleats, I should say not, as it then partakes more of the character of a box than a blank.

Q. 267. And this in spite of the temporary character of the attachment of the cross-pieces 1 and 2 as shown in sheet 4?

A. I have assumed that this attachment is strong enough to keep the parts from collapsing, and the question, of course, does not involve the strength of the structure, but whether it partakes more of the character of the box than a blank. I endeavored the other day to draw a line of demarcation between the blanks and the boxes, and while your hypothetical structures, which would never be used, and have no real bearing on the case, make it difficult to maintain the line of demarcation, I am doing the best I can to oblige you.

X Q. 268. Suppose the cross-pieces 1 and 2 were removed, would the structure of sheet 4 then respond to claim 1 of the reissued patent?

A. Remembering that you modified it by providing that the wires were tensioned as specifically illustrated in the Inwood & Lavenberg reissued patent in suit, I answer affirmatively.

X Q. 269. The fact that two cleats were assembled with and secured to the previously uncleated side sections, after the bottom, front and rear sides had been folded into box form, made no difference in the result that the structure was a blank, after the cross-pieces 1 and 2 had been removed as described?

A. No, because the parts now would fall over and flatten out into a blank form.

X Q. 270. And the mere fact that the front and rear cleats were assembled and secured as stated, did not affect the response of the final structure to claim 1 of the reissued patent. Is that correct?

A. Remembering that the final structure which you are talking about was unquestionably a blank and not a completed box, I answer that you are correct.

X Q. 271. Please review X Q. 266. Does the method there described respond to the terms of claim 2 of the Inwood & Lavenberg method patent No. 1,128,252, up to the semicolon in line 81 on page 4 of that patent?

A. No.

X Q. 272. Why not?

A. The phraseology of the claim and the order in which the elements or steps are arranged indicate that the stap- [fol. 877] ling is all done at the same time in the operation of making up the complete blank, which is not a fact with the method described in X Q. 266.

By the statement "the stapling is all done at the same time," I mean that after all the side sheets and cleats going to make up the complete blank have been assembled the wires are then stapled in place. It is within the meaning of claim 2, if the staples are driven progressively, beginning at one end of the completely assembled blank and driving one staple at a time on each side until the other end of the blank is reached.

X Q. 275. Where do you find in the claim something to prescribe this method of operation in which, as you sug-

gest, all of the blank parts must be assembled before any stapling is begun?

A. The claim says:

"which comprises asssembling previously formed individual cleats with the separate previously formed side material for an individual side to provide a side unit of the box, assembling additional such side units to provide the other sides of the box";

All this is prescribed as being done before the wires are applied, and nowhere else in the claim is anything said about assembling the side material and cleats.

The Inwood & Lavenberg flat blank might be made by hand, using a hammer, and assembling all of the blank parts in the carriage or former illustrated in the drawings of the Inwood & Lavenberg method patent.

X Q. 277. Assume this use of this same carriage and former with all the blank parts assembled therein. If, then, a workman proceeded to staple on the wires in the manner indicated in the method patent in suit, driving the staples progressively from one end of the blank to the other with a hammer, would that procedure respond to claim 2 of the method patent in suit down to line 81 thereof?

A. As I understand the claim, it would.

X Q. 278. Assume the use of the identical carriage or former shown in the drawings of the method patent in suit. A workman assembles at one end thereof two cleats and a side sheet of exactly the dimensions indicated in the patent, while leaving the remainder of the carriage empty. He then staples the wire to the single side section assembled as I have described, this wiring being done as indicated in the patent, and the wire being long enough to suit an entire blank and being so located with reference [fol. 878] to the first section as to allow a sufficient length of free wire for attachment to three more sections.

Then the workman assembles cleats and sheet for a second section, in the carriage adjacent to the section already wired, and then secures the same wires to this newly assembled section.

Thereafter the workman assembles and wires the third section and then assembles and wires the fourth section.

In the end he secures identically the blank indicated in the method patent in suit. He has employed identically the apparatus indicated in the method patent in suit.

Does the method just described respond to claim 2 of the method patent to line 81 thereof?

A. No.

X Q. 279. In other words, the method described in my next preceding question fails to respond to claim 2 of the method patent, down to the point indicated, simply because the workmen secured wires to certain of the sections before he assembled the others. Is that correct?

A. Yes. If it was unnecessary to limit the claim, as it is limited, that is the solicitor's lookout.

From the viewpoint of a mechanical engineer, I do not think the method described in X Q. 278 is the substantial mechanical equivalent of the method specifically disclosed in the Inwood & Lavenberg patent. Possibly the results of the two are identical, but one is the natural way to do it, assuming that it is done by hand instead of machinery, and the other is the way a natural born fool may do it.

X Q. 282. Assume the use of the identical carriage shown in the method patent in suit and that it is arranged to be fed through a staple driving machine which will drive staples at appropriate points with reference to the carriage for the making of the identical blank indicated in the method patent. On the advance end of the carriage are assembled the cleats and sheets for a single section of the box, the remainder of the carriage being left temporarily vacant.

Then the carriage is moved through the stapling machine while the wires are secured to the assembled blank parts. But the speed of the carriage is such that the workman assembles on the carriage the parts for the second section while the first section is being wired. Then while the second section is being wired the workman assembles the parts for the third section. While the third section is being wired the workman assembles the parts for the fourth section.

The result is the identical blank indicated in the method patent. The apparatus, except the stapling mechanism [fol. 879] and the feed, is identically the carriage disclosed in the method patent.

Is the procedure which I have described the substantial equivalent of the method disclosed in the method patent in suit?

A. I do not think so, as you indicated in the question that the stapling machine will have to be slowed down to accommodate the workman. The Inwood & Lavenberg patents in suit emphasize the fact that the workmen can assemble the stuff in the holders at their leisure, and feed them through the stapling machine without any limitation as to the rate other than that inherent in the makeup of the stapling machine itself.

X Q. 283. Suppose the workman assembled the first, second and third sections on the carriage and then started the stapling and while the stapling on the first section was in progress, he assembled the fourth section. Would that method be the substantial mechanical equivalent of the one disclosed in the method patent in suit?

A. I do not think so, because that would necessitate keeping the machine idle for a part of the time, whereas the Inwood & Lavenberg patents in suit indicate that by having separate workmen employing a number of separate holders, it is possible to feed different holders in succession to the machine as fast as it will take care of them and thus keep the machine operating as nearly continuously as possible and at the highest speed of which the machine is capable.

X Q. 284. Then, in your opinion, the method patent in suit must necessarily be limited in its scope to a high-speed operation?

A. Oh, no, I wouldn't say that as necessarily so, but that is obviously what was contemplated, and we have been talking about what is defined by claim 2.

X Q. 285. Suppose the workman assembled all four sections on the carriage exactly as indicated in the method patent in suit, then stapled one end of one wire at one end of the assembled blank sections; then stretched the wire by hand along its proper alignment over the blank section, and stapled the opposite end of the wire to the opposite end of the assembly, thus providing the two staples near the extremities of the wire to hold it temporarily in position; and then drove further staples to the necessary number in any manner and in any sequence which he might

select, between the two initially driven staples. Assume a second wire secured to the sections in the same manner.

Disregarding the particular claim 2 of the method pat- [fol. 880] ent in suit, would the method which I have just described be the substantial mechanical equivalent of the method disclosed in the method patent in suit?

A. No.

X Q. 286. Why not?

A. It would not make a great deal of difference so far as carrying out the alleged method with a hammer in the hands of the workman is concerned, but it would make a great deal of difference in carrying it out or rather in doing the stapling by machinery, as it would be a very awkward method, and for that reason I do not consider it the substantial equivalent.

I realize that the method comprises simply a series of steps, regardless of their performance by machinery or by hand or by both combined, and this is especially true in connection with true methods as distinguished from the function of the machine, or the obvious manner of carrying out any task or job. Personally I do not believe there is anything in the nature of a true patentable method involved in building up this box in the manner set forth in the method patent in suit. It is simply the obvious method or manner of assembling and fastening together the various elements going to make up the box blank provided you employ so-called preformed cleats and side sections or sheets.

I have not changed my mind on the point that the method of the method patent in suit might be performed by hand. Of course, some tools are necessary, as I cannot conceive of anybody having a hard enough fist to drive staples, so that I should say at least a hammer and a flat surface are necessary, but I would not call these machinery in the customary sense of the word.

X Q. 289. Then if the exact procedure explained in the method patent in suit were followed by a workman employing simply a hammer and a flat surface, and producing the exact blank disclosed in the patent—would that procedure respond to the terms of claim 2 of the method patent down to line 81 thereof?

A. Understanding that he did all his assembling of the sheets and cleats before he applied the wires, I would say so.

X Q. 290. Having done all of the assembling of the entire blank, if the workman then secured the wires first at their opposite ends, and then stapled them at their intermediate points as described in X Q. 285—would that procedure respond to claim 2 of the method patent down to line 81 thereof?

A. That is my opinion. Yes.

[fol. 881] X Q. 291. Then considering what we may call the hand method, so long as the blank parts are all assembled prior to any wire attaching operation, the exact sequence in which the staples are driven to attach the wires is immaterial?

A. I would not say it is entirely immaterial but the language of claim 2, which we are talking about, does not demand that the staples be applied in any particular order, once the assembly of the cleats and sheets is completed.

X Q. 292. Suppose we assume a four-sided workholder arranged to hold cleats for both ends of the box in the same relationship which they are intended to have in the finished box and to hold the four side sheets in the same relations to each other and to the cleats which they are intended to have in the finished box. Also assume that these cleats and side sheets are individually exactly like those indicated in the method patent in suit and that their relationships determined by the workholder are those intended to occur in the finished box indicated by the method patent in suit.

If now these cleats and sheets for the entire blank be assembled on this assumed workholder and held temporarily in place; and then wires be stapled to those parts beginning at one edge of a section and then being stapled progressively around all of the sections until the wires encircled the assembly, the wires being attached in this manner in the exact relaionship to sheets and cleats indicated in the method patent in suit—would the procedure just described respond to claim 2 of the method patent in suit down to line 81 thereof?

Please observe that the exact procedure of the method patent has here been followed, except that the preliminary assembly of the blank sections has been in four-sided box form instead of in the specific flat form of the method patent in suit.

A. If it were not so obvious that it did not, I would hesitate to answer this question because I do not understand the character of the hypothetical workholder. However, the next clause after line 81 of claim 2 is as follows: "arranging said side units in box form." This succeeds the stapling action in the claim, whereas the alleged method suggested in your hypothetical question provides that the arrangement of the side units in box form shall precede the stapling.

X Q. 293. Then in your opinion if the sequence of steps in a method deviates in any particular from the precise [fol. 882] sequence suggested in claim 2, for example, then the former does not respond to the claim?

A. That depends entirely on the method in question. In the present case I do not personally consider that there in a scintilla of patentable invention in this alleged method of the method patent in suit, and if the court can possibly sustain it, I do not see how they can avoid limiting it to every detail described.

X Q. 294. In other words, in your opinion, if sustainable at all, all of the method claims in the method patent in suit must be strictly limited to the precise details of the specific method explained in the patent?

A. It would amount to that if such a procedure were possible.

X Q. 295. In the box-blank-making methods suggested in the Rosback patents, which you have referred to, do these methods involve the complete assembling of all of the blank elements for a single blank, before the wire attaching operation is begun?

A. Most of the Rosback patents illustrate simply two cleats long enough for the complete box and a single side sheet likewise long enough for the complete box. Where these three elements only are employed to make up the side material (apart from the wires and staples) obviously the assembly must be completed before the stapling can begin with the machinery shown in the Rosback patents.

X Q. 296. Then with this explanation you answer X Q. 295 in the affirmative?

A. Understanding now that I am talking about the procedures disclosed in these various patents, I do not recall that any of them suggests anything different from what is described in your question.

X Q. 297. In your opinion what is the novelty, broadly speaking, in the Inwood & Lavenberg method, over the Rosback method just referred to, in respect to the step of assembling all of the blank elements prior to any wire attaching operation?

A. There isn't any. Broadly speaking, the alleged novelty of the Inwood & Lavenberg method over that of the Rosback patents resides in preforming the sheets and cleats, and that was old as shown in numerous prior art patents, for instance, the Archer (British) patent.

If the Inwood & Lavenberg method patent can be sustained at all, it cannot be sustained on the ground that it was novel to assemble all of the blank elements prior to any wire attaching operation.

X Q. 299. Assume the practice of a method identically [fol. 883] like the specific method disclosed in the Inwood & Lavenberg method patent, except that the side sheets when assembled with the cleats have all of their edges flush with the respective cleat ends. In other words, the resulting finished box would not be a lapped corner box but otherwise would be like the box indicated in the method patent.

Would this procedure respond to claim 2 of the method patent?

A. I see no reason why it would not.

X Q. 300. That is to say, the overlapped margins are not essential to the method described in claim 2?

A. I cannot see that it is set out in that alleged method.

X Q. 301. Assume the practice of this same method described in X Q. 299 and, further, that in the finished box there is lacking what you would consider a substantial tensioning of the wires over the box corners. Would this procedure respond to claim 2 of the method patent?

A. So far as any positive steps are set out, I would say that it made no difference, but I find the final functional clause "whereby relative longitudinal shifting of meeting edges of side material tends to bend the wire

binding out of normal alignment, and is resisted by the tensile strength of the wire." This would seem to indicate that the wires must be rather taut so that the tensile strength would come into operation before there had been any substantial relative movement of the meeting edges of the side material. I suppose that a great deal of this talk about the wires cutting into the corners and the relative movement being resisted by the tensile strength of the wires in these Inwood & Lavenberg patents is due to the fact that they foolishly employed the step-mitered ends of the cleats instead of the tongue and groove construction, for which, I understand, complainants have abandoned the step-mitered construction.

If the wires were "rather taut" as I have described, they would involve the substantial tensioning inquired about in X Q. 301, provided the step-mitered joints were employed instead of the tongue and groove, because in that case there would be an opportunity for the "relative longitudinal shifting of meeting edges" to occur to be resisted by the tensile strength of the wire.

As far as I know, I have never dropped a loaded Inwood & Lavenberg box on one of its corners, nor have I ever witnessed this. I have never subjected one of defendant's loaded boxes to this test, nor witnessed such a test. I have never subjected either an Inwood & Lavenberg box or one [fol. 884] of defendants' boxes to a heavy compression applied at one corner and acting toward a diagonally opposite corner. I have never made such a test of any box like those of the defendants in the suits against the Chicago Mill & Lumber Company or the National Box Company. I have had no opportunity whatever to observe the practical operation of tongue and groove cleats as compared with step-mitered cleats in boxes of the types referred to, but a common knowledge of physics and engineering teaches what will happen up to a certain amount of strain without any tests.

X Q. 308. Does your "knowledge of physics and engineering" enable you to tell us just how an Inwood & Lavenberg box fails under compression stresses applied at one corner of the box in a direction along a diagonal of the box?

A. I would have to have a much more accurate definition both of the direction of the stress and also of the amount

of the stress. I would want to know how it was applied, by what means, and with what the box was loaded. Without a whole lot more information than you have given me any consideration of the matter would presumably be a waste of time, so I take it you had better get the information on the record from your own witnesses.

X Q. 309. I am trying to find out how much, if anything, you know about the comparative functioning of tongue and groove cleats and step-mitered cleats.

With this in view I ask you to consider defendant's box exactly as it is made today. Assume that this box is placed upon a rigid platform with one of its trihedral corners resting upon that platform and the diagonally opposite trihedral corner of the box in a vertical line through the corner which rests on the platform. The box is empty. The wires are twisted together as defendant intends them to be. To the uppermost trihedral corner of the box we apply a gradually increasing pressure vertically downward, the pressure being increased until the box is destroyed.

Please describe the exact progress of failure of this box from the beginning of the distortion of the box to destruction.

A. Obviously nobody could describe everything that occurs under those conditions without witnessing an actual test and making very careful notes of the same. If you want a comparison I think I can go as far as would be necessary for your purpose by saying that——

X Q. 310. I interrupt you to say that I have not yet [fol. 885] asked you for any comparison. I ask you only to answer, as fully as you wish, and so far as you can, the precise question as to the failure of the described box under the described conditions.

A. I will not answer such a question without making precisely the test called for by your question, because I might unwittingly give the court some misinformation, which I do not care to do as long as it is possible to make such tests.

X Q. 311. Does not your "knowledge of physics and engineering" enable you to give the court at least some certain information as to at least some of the things which would occur in the test described?

A. Certainly. Your question, however, called for a very exact statement of what would occur up to the destruction of the box, and the further you proceed, the more difficult it becomes to figure out on paper exactly what would happen. I might get a drawing board, lay out the elements in all their relationship and work out the problem, but it would be much easier and quicker to make the actual test.

X Q. 312. Please go as far as you can in describing what would happen in the test referred to.

A. I refuse to go anywhere at all without laying out the matter so I can make a careful study.

X Q. 313. Before testifying as you have with reference to the functioning of tongue and groove cleats, didn't you give the matter "careful study"?

A. I gave the matter enough study to determine that until the tongue and groove joints were broken, the wires will not particularly come into play under such a condition as outlined in your breakdown test.

X Q. 314. Does your "careful study" enable you to state now at what stage in this test the tongue and groove joints would be broken?

A. No, you could not determine exactly when that would occur without knowing the particular materials involved in making the joints, and figuring how much the reinforcing action of the wires would save the joints. In other words, it would take more to break the joints with the wires if they were applied as called for in the Inwood & Lavenberg patent than it would take without them.

X Q. 315. The test I have been referring to was carefully described to be a test of defendant's own box as now made and which you presumably know thoroughly. Assume that the "particular materials involved in making the joints" are those with which you are familiar as used in [fol. 886] defendant's boxes and that the action of the wires is exactly that intended in defendant's boxes. Then please state as nearly as you can at what stage in the test the tongue and groove joints would be broken?

A. I cannot state how many pounds of pressure would have to be applied before the joint is broken, but I can say that much less would have to be applied than would be

necessary if applied to a box constructed in accordance with the teachings of the Inwood & Lavenberg patent in suit except that it had tongue and groove joints instead of step mitered joints. With the reinforcing action of the wires due to the tension resulting from a real utilization of the teachings of the Inwood & Lavenberg patent as particularly illustrated in dotted line position of Fig. 4 of the reissued patent, the tongue and groove joint would be very strongly reinforced by the action of the wires.

X Q. 316. Obviously, you are evading the question and interjecting an argument of your theories. Can you at least advise the court whether in the described test of defendant's identical box, the box would remain an effective container after the tongue and groove cleats had been broken?

A. "Effective container" is a rather elastic term, but I believe that the box might be shipped with some contents at any rate with considerable safety after the tongue and groove joints had been broken.

X Q. 317. Can you go so far as to state to what extent the box would be distorted along its diagonal before the tongue and groove cleats would be broken?

A. Obviously it cannot be distorted substantially prior to the breaking of the joints.

X Q. 318. Can you describe to the court how the box would behave in the described test, after the tongue and groove cleats had been broken?

A. I can go this far and say that there would be a tendency to a longitudinal movement as between the sides, which tendency would be resisted by the action of the wires, the effectiveness of which would depend upon how tightly the wires were originally placed on the box. Obviously, the more tightly the wires are placed the more effective the resistance.

X Q. 319. In the normal practice employing defendant's box are the wires originally placed on the box tightly enough to resist materially the tendency to longitudinal movement, which you have referred to?

A. As I recall it, they are put on tightly enough so that they would halt the longitudinal movement after the tongue and groove joints had been broken, but not until there had

[fol. 887] been considerable more distortion than could occur in a box constructed in accordance with the teachings of the Inwood & Lavenberg reissued patent in suit.

X Q. 320. You have already testified that you have never seen a Rosback box. Hence, of course, you cannot say definitely how a Rosback box would behave under a test like that which we have just been discussing.

A. I can say this about it, except for the action of the tongue and groove joints in resisting distortion, the Rosback box would behave no differentiy from defendant's box. In fact, if as perfect a box were made as is illustrated in the Rosback patents, I would expect it to offer more strength and resistance to such a test than defendant's boxes would.

X Q. 321. Then the integral connection between the side sheets of the Rosback box would not affect the behavior of the box under the test described?

A. I would not expect it to offer any great amount of strength, because the film of veneer that is left is very thin, and if it did not split through when the box is formed, it would be very apt to as soon as it was dried out a little.

X Q. 322. Please examine claim 9 of the method patent in suit; and consider it in connection with the expression in the specification of the method patent, page 3, beginning at the top of the right-hand column, line 65, and explaining that the meeting edges of the side sheets are preferably not connected in any way save by the flexible binding wire and by such inter-engagement as the cleats may have.

If a method responded exactly to claim 9, but the cleats employed were tongue and groove, would this latter circumstance avoid a complete response to the claim?

A. Yes.

My reason for the last answer is that the use of the tongue and groove cleats would not "permit relative longitudinal shifting of meeting edges," etc., within the meaning of the claim, and for the further reason that the claim describes "leaving said side sections otherwise substantially disconnected," and in my opinion the tongue and groove joint is a substantial connection. I suppose that Inwood & Lavenberg were anxious to produce a box that could be considerably distorted, so it would yield under a shock

without breaking anything, and that was one reason why they employed the step-mitered joints, which permit such relative movement, rather than the tongue and groove joints [fol. 888] which cannot permit it without breaking the cleats.

I should not call defendant's box a flexible and elastic box as long as the tongue and groove are intact, although, of course, due to the thin material of the sides, it has some flexibility as compared with an ordinary packing case, in which the strength is due entirely to the wood and not to any wires. Certainly it is not as flexible and elastic as the box of the Inwood & Lavenberg patent in suit.

If the tongue and groove cleats of defendant's box become broken, I would say that it is just as much a flexible and elastic box as the box of the Inwood & Lavenberg patent in suit. By that I mean that it can suffer as much distortion as the Inwood & Lavenberg box, although I do not believe it would be so elastic in the sense that it tends to resume its normal shape after distortion. This tendency, so far as it exists, would be much greater with the tight wiring of the Inwood & Lavenberg box of the reissued patent in suit than it would be with the relatively loosely wired box employed by defendant.

In a precise sense the tongue and groove cleats in defendant's box, while they remain intact, prevent the box from being a flexible and elastic box in the sense in which the Inwood & Lavenberg box is flexible and elastic.

X Q. 327. And in the sense in which Judge Sanborn used the words "flexible, elastic" in his opinion?

A. Well, that would apparently not follow, because he says that defendants there "employ a mortise and tenon joint at the cleat ends," although I think he meant the tongue and groove joint. He did find infringement, so that Judge Sanborn apparently considered the phrase more broadly than I did.

X Q. 328. So far as flexibility and elasticity of the box is concerned, how do the tongue and groove cleats in defendant's box function differently from the tongue and groove cleats in the infringing boxes, which were before Judge Sanborn?

A. So far as the action of the tongues and grooves is concerned, there would be no difference. I do not know

just how tightly the defendant's boxes were wired in the case before Judge Sanborn, as that affects the elasticity when used in the accurate sense of tending to resume its normal form when the strain is removed.

X Q. 329. Do you understand from Judge Sanborn's opinion that he considered the tongue and groove cleats in the defendant's boxes before him did not materially impair the flexibility of the box?

A. Evidently not enough to avoid infringement in the [fol. 889] judge's mind. Of course, there the now expired box patent alone was at issue, and the fact that it had been reissued on the point of the character of the cleat ends made the difference immaterial if claim 1 was to be sustained as valid.

X Q. 330. Refer to claim 13 of the method patent in suit. Note that it refers to "box sections" broadly and does not recite cleats.

Assume that the exact method described in the method patent be employed, but without using any cleats. The result is a four-sided blank exactly like that disclosed in the method patent, but omitting the cleats. Would that procedure respond to claim 13?

A. Yes, but it would produce nothing of any value.

X Q. 331. Suppose instead of omitting all the cleats, in the practice of the process just described, you omitted the cleats for only two non-adjacent sides. Would that procedure respond to claim 13?

A. Provided that their edges were close enough together to tension the connecting wires and cause them to tend to cut into the edges of the sections in the manner disclosed in Fig. 4 of the Inwood & Lavenberg reissued patent in suit, it would.

X Q. 332. Suppose the cleats employed in this described method were tongue and groove cleats instead of the specific step-mitered cleats—would the procedure respond to claim 13?

A. With the same proviso as in the immediately preceding answer, I answer yes.

I consider that claim 13 is limited, as I said claim 2 was limited, to the necessary assembling of all of the elements of the blank before any wire attaching operation is performed.

Regardless of Judge Sanborn's opinion, it is my position that the main feature of novelty in the Inwood & Lavenberg reissue patent as distinguished from the Rosback patents of the prior art, is that due to the shape and proportions of the side sheets and cleats, and the way the wires are applied, there is the cutting-in of the wires into the corners of the boxes illustrated in dotted lines in Fig. 4 of the reissue patent in suit, and this occurs irrespective of whether the joints are step-mitered or tongue and groove. With the step-mitered joints illustrated, it seems that this reinforcing due to the action of the wire is more essential than it is if the tongue and groove joints are employed. Since the step-mitered cleat was old in the prior art Rosback structures, it will be seen that it contributes nothing of novelty to the structure. Accordingly, [fol. 890] if I were holding that the Inwood & Lavenberg reissued patent was for a novel and patentable invention, I would consider that it covered the tongue and groove cleats.

X Q. 335. Assuming the novelty and patentability in the reissued patent, which you have just referred to, is it essential to that novelty that each side sheet of the blank project beyond each end of its cleat?

A. Not admitting the assumption of the question, I should say that to secure the novel effect, it is necessary that in the complete box there be eight instances in which the cleat terminates short of the edges of the side sheets.

X Q. 336. Are the particular locations and the specific distribution of these eight instances of projecting sheet edges, as shown in the drawing of the Inwood & Lavenberg reissue, essential to the novelty of the blank structure covered by the reissued patent, assuming the novelty and patentability which you have referred to?

A. Not agreeing with the assumption of the question, and noting that there are sixteen instances in the Inwood & Lavenberg box, I would say that the location can be varied and still produce this same theoretical tensioning effect.

X Q. 337. With this explanation, do you answer X Q. 336 affirmatively?

A. No.

X Q. 338. But a blank having the sheet edges spaced apart a greater distance than the thickness of the sheet, but otherwise identical with the design disclosed in the Inwood & Lavenberg reissued patent, would not respond to claim 1 of the reissue?

A. Not as I understand the novelty of the device.

X Q. 339. Even if each section of the blank were identical with the corresponding section shown in Fig. 1 of the reissued patent, including step-mitered cleats and a projecting sheet margin at the end of each cleat—if only the sheet edges were spaced apart a distance equal to or greater than the thickness of the sheet, then the resulting blank would not respond to claim 1 of the reissued patent?

A. It would not, as I understand the novelty of the invention. It will be obvious that in order to get the tensioning action particularly illustrated in dotted lines in Fig. 4 of the reissued patent in suit, it is necessary to have the length of the wires between the staples 4-4 of Fig. 3 so short that when the sections are extended as shown in full lines in Fig. 3, the edges of the side sheets will be brought close together; otherwise when you turn the side sheets into the position shown in dotted lines in Fig. 3 the wires would not be tensioned in the manner [fol. 891] illustrated in dotted lines in Fig. 4. Of course, with these comparatively stiff wires, even assuming that you have a space between the edges of the sheets when the blank is laid out flat, considerably greater than the thickness of the side sheets, when the blank is folded, the edges of the side sheets would be drawn into the position shown in dotted lines in Fig. 3, but in that case instead of the wire cutting into the edge as shown in dotted lines in Fig. 4, they will simply be curved around the edge or corner, without substantially cutting into it.

My position is that no blank would respond to claim 1 of the reissued patent in suit unless it were constructed to produce overlapping sheet edges in the finished box, because otherwise you would run into the prior art Rosback structures. Disregarding the prior art claim 1 of the reissued patent is limited by its express terms to a blank constructed so as to provide overlapping sheet edges in the finished box.

X Q. 342. Refer to claim 2 of the method patent. Assume the practice of exactly the method defined in that claim, employing sheets which have no projections beyond cleat ends, the blank therefore producing a finished box in which the sheet edges do not overlap. Would that procedure respond to claim 2 of the method patent?

A. Except for the final functional clause of the claim it would seem to respond to the description thereof, although it will not respond to the disclosure of the specifications and drawings.

The described method would not respond to the final functional clause of method claim 2 because the tensile strength of the wire in your hypothetical construction would not be so effective in resisting the relative longitudinal shifting of meeting edges of pieces of side material.

X Q. 344. Is there any question in your mind that in the case described the tensile strength of the wires would be at least in some substantial degree effective to resist the longitudinal shifting of meeting edges of the side pieces referred to in the claim?

A. It would be after the shifting had been sufficient to cause the wires to bite into the edges, but its action in that respect would, as I see it, be identical with the corresponding action in the Rosback prior art box, whereas in the structure disclosed in the Inwood & Lavenberg patent, the wires are already forced into the edges as shown in dotted lines in Fig. 4 of the reissued patent in suit, and the resistance referred to is effective as soon as the stress [fol. 892] tending to produce the relative longitudinal shifting starts.

X Q. 345. Then refer again to claim 2 of the method patent. Assume the practice of exactly the method defined in that claim, employing sheets which have no projections beyond cleat ends, the blank therefore producing a finished box, in which the sheet edges do not overlap.

You have just said that the wires would be at least in some substantial degree effective to resist the longitudinal shifting of the sheet edges "after the shifting had been sufficient to cause the wires to bite into the edges."

Does this mean that the described procedure would respond "pro tanto," to use your expression of yesterday, to claim 2 of the method patent?

A. No.

X Q. 346. Why not?

A. Because it accomplishes no more than was accomplished by prior art Rosback boxes.

X Q. 347. You understood clearly that my question asked whether a certain procedure responded to claim 2 of the method patent. Your answer pertains simply to a question of novelty. Please refrain from further evasion and disregard the question of novelty or patentability of the claim, and answer my question frankly on that basis.

A. I have no intention of evasion, but am simply trying to tell the whole truth, as I understand it. You have first taken out a patent on an alleged novel box, in which you endeavored to find some novelty by describing the condition of the box at a certain stage in its manufacture. Then you try to cover the same invention by an alleged method patent, in which you resort to the action of the box after it is completed to define the alleged novelty of the method. You can scarcely wonder if I sometimes confuse the box and the method in answering your questions. If you want to omit the the limitations you yourself have put into the claim and broaden it out to a point where it defines nothing more than prior art practice, then, of course, I will answer the question affirmatively, but I understand you are always inquiring about the scope of the claim as I understand it.

X Q. 348. I now ask you to give me a frank answer, without evasion, and without reference to questions of novelty, to X Q. 345.

A. Well, I think your petulant criticism is highly unwarranted in view of the material we are discussing. I will pass it and proceed. You say:

[fol. 893] "Assume the practice of exactly the method defined in that claim."

As I understand it, you drew the claim, so before I make any assumption I want to ask you a few questions about the claim. It contains the following statements, which I do

not understand as warranted by a disclosure of the specification and drawing:

"securing to the cleats of each side unit a wire binding extending completely across said unit; connecting said side units by said wire binding, while leaving the latter laterally flexible to accommodate relative shifting of the separate meeting edges of the pieces of side material."

Just what do you mean by those phrases?

X Q. 349. In your direct testimony, and referring to the two steps mentioned in the excerpt you have just quoted from the claim, you say, "I do not see how steps (c) and (d) as practiced by defendant can be divided in the manner set forth, as the result set out in both steps is due purely to the single step of passing the workholder through the stapling machine."

If you cannot reach an understanding of the subject-matter of claim 2 of the method patent, then it would be futile for you to reply to my question. But since you have so freely discussed this claim heretofore, I have assumed that you have a definite understanding of your own as to its meaning and I want you to testify with reference to your own understanding.

I shall explain my interpretation of claim 2 to the court at the proper time. For the present we are concerned with your understanding and not mine. Of course, I decline to answer your question.

If you will give me a frank answer to my question or else will state that, in spite of your earlier testimony on the subject, you can gain no understanding of your own of claim 2, I will be very grateful.

A. Of course, I have my own understanding of claim 2, but I suppose that the court is interested in testimony in which there can be no question but what the Examiner and the witness have the same understanding of what they are talking about, and in order to make sure that I was answering what you were asking about, I asked you the question, which of course, I have no authority and had little expectation of the courtesy of a reply. As I understand it, the question harked back to is X Q. 345, which I answered "no." You then asked, "why not," and I gave you my

[fol. 894] explanation. Just why you call that evasion is more than I can fathom.

X Q. 350. In order to make sure just what your answer is, I want to put the question again as follows:

"Assume the practice of a method identically like the specific method disclosed in the Inwood & Lavenberg method patent, except that the side sheets when assembled with the cleats have all of their edges flush with the respective cleat ends. In other words, the resulting finished box would not be a lapped corner box but otherwise would be like the box indicated in the method patent."

Would this procedure respond to claim 2 of the method patent?

A. Not as I understand it.

X Q. 351. When did you develop the understanding that leads to this negative answer?

A. I suppose when I first studied the patent. The final functional clause is not as clear as it might be, but I understand it to refer to the novel tensioning action of the wires inherent in the specific construction of the Inwood & Lavenberg box shown in the reissued patent. While I think that a method patent should not properly be limited by reciting the operation of the article produced, yet since it is put into the patent or rather into the claim, I do not feel at liberty to disregard it.

X Q. 352. And you think that that is a natural and logical position for you to have taken, and one that you have adhered to consistently throughout your study and testimony in this case?

A. I am not prepared to say without going back to the original deposition, which was prepared some weeks ago, and which I have not read lately, as to how consistent I may have been. I am giving you my present understanding of the facts inquired about.

X Q. 353. What was your understanding on this same subject yesterday?

A. I presume the same as today, although I do not recall that this particular subject was up before in this shape.

X Q. 354. I call your attention to X Q. 299, in which you answered affirmatively the identical question, in the iden-

tical words, which you have just now answered negatively. I wish you would give us all the assistance you can to ascertain which of these answers the court should accept as expressing your honest opinion?

[fol. 895] A. That is easy. At the time I answered X Q. 299 I had not considered the effect of the final functional clause and seem to have ignored it. When I answered X Q. 299 I said: "I see no reason why it would not." At that time I evidently had not given the matter the thought that was forced on me by the cross-examination this afternoon.

X Q. 355. Were you also subject to this same lack of preparation when you reiterated, in substance, your affirmative answer to X Q. 299 in X Q. 300, where you say that you cannot see that it (the overlapped margins) is set out in the alleged method claim 2?

A. I would scarcely call it a "lack of preparation." The claims, such as they are, of this alleged method patent were not discussed by Mr. Browne, and I did not go into them very deeply in preparing my deposition. Questions, and especially cross-questions, always lead to further study, as is evidenced by the fact that immediately after the two questions inquiring about, in answer to X Q. 301, I did take into consideration this functional statement.

X Q. 356. I note that you discussed in answer to X Q. 301 the final functional clause of claim 2 at great length, but I now understand you to say that you answered X Q. 299 and X Q. 300 as you did, because you did not then have sufficiently before you the significance of that same final functional clause. Is that correct?

A. That is apparently the case.

X Q. 357. Then, to make quite sure what is your opinion of today as distinguished from your opinion of yesterday, I take it that your present answer to X Q. 299 is negative. Is that correct?

A. Yes.

X Q. 358. Assume the practice of a method identically like the specific method disclosed in the Inwood & Lavenberg method patent, except that the side sheets when assembled with the cleats have all of their edges flush with the respective cleat ends. In other words, the resulting finished box would not be a lapped corner box, but otherwise would be like the box indicated in the method patent.

Would this procedure respond to claim 17 of the method patent in suit?

I urge you to study this claim fully enough to enable you to state an opinion that you will be willing to adhere to for at least forty-eight hours.

A. No.

X Q. 359. Why?

A. Because in that case "said members for respective [fol. 896] sides" would not be "spaced endwise from one another a predetermined distance, permitting them to be foldably connected and folded into a predetermined relation in forming a box." In the disclosure of the Inwood & Lavenberg patent, this predetermined distance is twice the thickness of the side material, and with the construction you have described, this distance would be done away with and it would be impossible to fold the box to bring the parts in the desired relationship.

X Q. 360. Please reread the question, noting that the described procedure retains the cleats in the same relationship shown in the method patent. And then see whether the answer you have just given is correct.

A. From some conversation off the record I see that I have misunderstood not only this, but some other hypothetical questions, and, accordingly, I will ask you to make drawings illustrating this hypothetical structure, as well as any others which you wish to ask about in the furture.

X Q. 361. I am, and have always been, quite willing to provide the witness with sketches illustrating my questions, but until this eleventh hour the suggestion has never before been made.

The witness is now asked to point out exactly what hypothetical question he has misunderstood, so that I may be able to supply the necessary sketches.

A. It is now practically time to adjourn for the day, and I do not propose at this time to stop and read over all that we have done during this cross-examination. Without any study, however, or rather going back to the questions we have confused this afternoon, questions 299, 345, and others which assumed that the cleats had their ends coterminous with the sides, have been misunderstood. There may be other questions on this particular hypothetical structure.

X Q. 362. I call your attention to the fact that I have

used the exact language of the description in X Q. 358, in three instances. In the third instance, X Q. 358, you conclude that in the described construction "it would be impossible to fold the box to bring the parts into the desired relationship."

Did you understand the description of the method in X Q. 299 to lead to this same impossibility of folding the box parts into the desired relationship?

A. My present recollection is that I overlooked it.

X Q. 363. I suppose you would make the same answer with reference to the second use of this description in X Q. 345?

[fol. 897] A. Yes.

X Q. 364. Before we adjourn please point out the ambiguity in X Q. 358 which has led to your asserted confusion.

A. I do not think it is necessary for me to point out any ambiguity. The fact is that you defined the hypothetical structure or method in which you had one thing in mind, and I answered having another thing in mind. That rendered the testimony on this point worse than useless, and to avoid anything of the sort in the future I want all hypothetical structures presented in drawings, so that there can be no misunderstanding, and we can be sure that we both have the same thing in mind.

X Q. 365. On two occasions, each time after prolonged thought on your part, the second time after more than ten minutes' thought, you understood thoroughly the description used for the third time in X Q. 358. Your answers to X Q. 299 and X Q. 345 indicate a perfect understanding of the described method.

You now seem to have detected an ambiguity in this description, when used for the third time. I invite you to point out the ambiguity before we adjourn.

A. I note that I have not looked at the question inquired about since you inquired about the ambiguity. It is not a question of whether or not it is ambiguous, but the question is whether or not you have one structure in mind in asking the question and whether I have another structure in mind in answering it. With your superhuman knowledge and intellect you assume to know what I had in my finite mind. There has been a misunderstanding, irrespective of

hether or not there was any ambiguity, and in order to
et rid of future misunderstandings, you can bring on your
rawings and I will then make sure that I know what you
ave in your mind, as I have not the superhuman and in-
nite intellect you seem to think you possess.

X Q. 366. I lay claim to nothing but an honest intention
o extract from you, if possible, definite conclusions which
ou are willing to adhere to. Since you now have an ex-
use for deferring further answers until I produce draw-
ngs, at tomorrow's session, I now ask you if between now
nd the beginning of the cross-examination tomorrow morn-
ng you will absolutely refrain from any discussion of the
ase with defendant's counsel or with anyone representing
efendant, or with anyone representing the Saranac Auto-
natic Machine Corp., or any other concern of a similar
ame?

A. Certainly.

fol. 898] By Mr. McElroy: Before resuming this cross-
xamination I wish to make a statement about the apparent
ontradiction that occurred yesterday between my answer
o X Q. 299 where I answered it affirmatively, and the same
uestions, X Qs. 345 and 350, which I answered negatively.
t is needless to say that I was astonished when in X Q.
54 you called my attention to this apparent contradiction.
was mentally very tired at the time so that I did not stop
o go back over the record and see the reason for it, but I
id make the answer to X Q. 354 that I did as follows:

"That is easy. At the time I answered X Q. 299 I had
ot considered the effect of the final functional clause and
eemed to have ignored it. When I answered X Q. 299 I
aid: 'I see no reason why it would not.' At that time I
vidently had not given the matter the thought that was
orced on me by the cross-examination this afternoon."

fter dinner last night, when I was rested and refreshed,
got to thinking about it and the form of the questions you
ad been previously asking me, and the solution flashed on
y mind, which I have verified this morning by reading
ver the pertinent part of yesterday's testimony. In simi-
ar questions directed to this same claim 2 of the Inwood
Lavenberg method patent, to-wit, Nos. 271, 277, 278, 289,

290 and 292, you in every case asked if it responded to the terms of claim 2 "up to the semi-colon in line 81 on page 4 of that patent." An examination of this claim shows that only about half of it is included up to line 81, and that of course the final functional clause is not included. When you asked question 299 you omitted the limitation that it was "up to the semi-colon in line 81 of page 4 of that patent," and the question of course referred to the complete claim. Having in mind this limitation of the previous questions on this claim to the part of the claim preceding the semi-colon in line 81, I overlooked the fact that question 299 was not so limited, and answered as I did, which answer is absolutely correct with the understanding I then had of the question, which I erroneously supposed was concerned only with claim 2 up to line 81. With this explanation I am certain it will be apparent to any fair minded person that I had absolutely no intention of testifying in a contrary manner at different times or endeavoring to mislead anybody. I freely admit that it was carelessness on my part not to notice that the limitation was removed from [fol. 899] X Q. 299 after it had been used in the preceding cross-question which I noted at the beginning of my statement.

X Q. 367. In answering X Q. 301 you apparently had recovered from the misunderstanding you have just described, under which you labored in answering X Q. 299 and X Q. 300, because in your answer to X Q. 301 you discussed at some length the final functional clause of claim 2. Do you recall what relieved you of your previous misunderstanding between your answers to X Q. 300 and X Q. 301?

A. No, unless I had read the claim again between the questions noted.

X Q. 368. After reflecting upon the subject, do you now feel that in answering X Qs. 299 and 300 you misunderstood the hypothetical methods referred to in those questions and therefore supposed that as a result of those methods "it would be impossible to fold the box to bring the parts into the desired relationship" as you suggested in your answers to X Qs. 358 and 359?

A. I am not sure yet what the precise structure is that you intended in your hypothetical question. However, I

am sure that I had one idea of that structure in answering X Q. 299 and another idea in answering X Q. 358. Which one was correct I assume I will find out when you furnish me the drawings to illustrate what you had in mind in asking the questions.

X Q. 369. In order to clear up this situation I ask you to assume the practice of a method employing exactly the cleats disclosed in the Inwood & Lavenberg method patent. When the cleats and side sheets for the entire blank are assembled, the edges of each side sheet are flush with the ends of its cleats—in other words, throughout the blank there is no margin of a side sheet projecting beyond the end of a cleat.

The cleats and sheets thus assembled are wired in exactly the manner indicated in method patent in suit. The wired blank is folded into box form, ends are fastened in place, the lid of the box is closed down, and the wires are twisted together.

I show you a drawing marked "Plaintiff's diagrams, sheet 5" which indicates the product of the method just described. The wires have bitten into the box corners because the sections before wiring were placed close enough together to produce this effect in the completed box.

(Here follows Plaintiffs' Diagram, sheet 5, side folio 899½.)

Please state whether the method just described responds [fol. 900] to claim 2 of the method patent in suit, and please consider the entire claim.

A. I should say that would depend upon whether or not in the flattened blank with the wires stretched out flat, the distance between the adjacent edges of the side pieces was substantially less than three times the thickness of the side pieces and at least equal to twice the thickness of the side pieces. As I have seen no drawing of the blank in the flat, I cannot say whether it responded to this requirement or not.

The limitation in claim 2 of the method patent in suit which renders it of controlling importance whether the distance between the adjacent edges of the side pieces was substantially less than three times the thickness of the side pieces and at least equal to twice the thickness of the

PLAINTIFFS' DIAGRAMS: SHEET 5.

e pieces is the final functional clause to which I previ-
ly referred, and which I understand to refer to practice
the apparently novel method that Inwood & Lavenberg
l of causing the wires to bite into the corners of the
es in the manner illustrated in dotted lines in Fig. 4 of
reissue patent in suit. I have said that the final func-
al clause of claim 2 of the method patent describes a
racteristic of the finished box, rather than a step of
method. But this result is produced during the recited
p of "arranging said side units in a box form" and this
p is certainly included in the method patent.

X Q. 372. Has the particular box, plaintiff's diagram,
et 5, the characteristic referred to in the final functional
use of the method claim 2—"whereby relative longi-
inal shifting of meeting edges of pieces of side material
ds to bend the wire binding out of normal alignment,
l is resisted by the tensile strength of the wire"?

A. The drawing is not uniform on all the four corners.
the upper left-hand corner, the wires seem to have bitten
the edges of the side pieces sufficiently to produce the
et noted to a very substantial degree, while it is much
on the other corners. Possibly I could answer the
stion best by saying that it does to some extent, assum-
that the result inquired about is caused by the edges
the flattened blank being separated as set out in my
wer to X Q. 369.

Assuming that the wires in plaintiffs' diagram sheet 5
ually cut into the corners of the box to a substantial de-
e at each corner, and considering the box simply as a
shed structure without regard to the method by which
as arrived at, the box would not permit "relative longi-
[1901] tudinal shifting of meeting edges of pieces of
e material" if the box were subjected to diagonal cor-
wise stresses, because there are no meeting edges. In
h a hypothetical construction the edges are separated
do not meet. It would be better to describe the two
es which are nearest each other at each box corner in
et 5 as being "adjacent edges of pieces of side mate-
l," although the etymology of the word "adjacent" in-
ates that the parts are in juxtaposition. However, I be-
e it is used loosely enough to be applicable in the pres-
instance. Referring to the box shown in sheet 5, that
would permit relative longitudinal shifting of adjacent

edges of pieces of side material if the box were subjected to diagonal cornerwise stresses. That relative longitudinal shifting of edges in the box of sheet 5 would tend "to bend the wire binding out of normal alignment" as I understand the phrase. Further, that tendency to bend the wire binding out of normal alignment would be "resisted by the tensile strength of the wire," as I understand the phrase.

X Q. 378. Then except for your criticism of the word "meeting," and if we substituted therefor the word "adjacent"—would the box of plaintiffs' diagram sheet 5 respond, as a finished box, to the description in the final functional clause of claim 2?

A. Disregarding whether or not this biting of the wire into the edges is produced by the method illustrated in the Inwood and Lavenberg patents, I would say so.

X Q. 379. If these results referred to in the final functional clause of claim 2, employing the word "adjacent" as I suggested, were in fact brought about by "arranging said side units in box form."—would then the method, which I described in connection with the sheet 5 box, respond to claim 2 of the method patent, using the word "adjacent" instead of "meeting"?

A. I will make precisely the same answer as I made to X Q. 369.

X Q. 380. Then you find it impossible to answer my most recent question without having before you a drawing exactly illustrating the blank from which the sheet 5 box was made. Is that correct?

A. Unless I had the drawing there would be an element of speculation in it, which I do not care to assume.

X Q. 381. Do you know whether using exactly the side sections shown in sheet 5, you could assemble them in flat blank form in such relationship that when wired together in that relationship and folded into box form, as indicated in sheet 5, the wires would cut into all the box corners in [fol. 902] the manner illustrated at the upper left-hand corner or sheet 5?

A. If the wires were the proper length, I see no reason why it could not be done.

X Q. 382. Have you any idea to what extent the side sections would have to be spaced apart to produce this result?

A. If the wires were absolutely taut throughout, as indicated in the drawings, I should say that it would be somewhere between twice and three times the thickness of the veneer side sheets.

X Q. 383. Then please assume that the spacing you have just described was employed in the method of making the box shown in sheet 5 as I described it in X Q. 369; and state whether that method thus qualified would respond to claim 2 of the method patent, if we used the word "adjacent" instead of "meeting" in the final functional clause.

A. I am a little uncertain as to the precise meaning of the clause "connecting said side units by said wire binding, while leaving the latter laterally flexible to accommodate relative shifting of the separate meeting edges of the piece of side material." As applied to the specific structure shown in the Inwood & Lavenberg method patent where the edges of the side sheets overlap, the wires bite into one edge at each corner, and consequently the part of the wire that can theoretically move is that extending from the corner where it cuts into the next staple on the side which is overlapped. In the hypothetical construction, the portion of the wire that is theoretically free to have this movement is simply the comparatively short section where it emerges from the edge of one side sheet and extends to the edge of the adjacent side sheet. This difference theoretically reduces the possible relative movement of the edges, and I do not know whether the court would decide that this is a material difference. Apart from this feature of difference, I would answer the question affirmatively.

X Q. 384. Would the method described in X Q. 369 respond to claim 17 of the method patent?

A. I see no reason why it would not respond to the language of claim 17, except that the side pieces are not "foldable," but as this same thing would be true of the side pieces actually disclosed in the Inwood & Lavenberg method patent, I take it that it is a question of the claim being misdescriptive and objectionable for that reason.

X Q. 385. Your criticism is directed against the word "foldable" in line 3 of claim 17?

[fol. 903] A. Yes. It looks as if in drafting the claim you are describing the Rosback box rather than your own.

X Q. 386. Does the method of X Q. 369 respond to claim 13 of the method patent in suit?

A. I will make the answer as to X Q. 369.

X Q. 387. Have you noted that in describing the method in X Q. 369 I said "the wires have bitten into the box corners because the sections, before wiring, were placed close enough together to produce this effect in the completed box." Does this statement meet the condition which you have set out in your answer to X Q. 369?

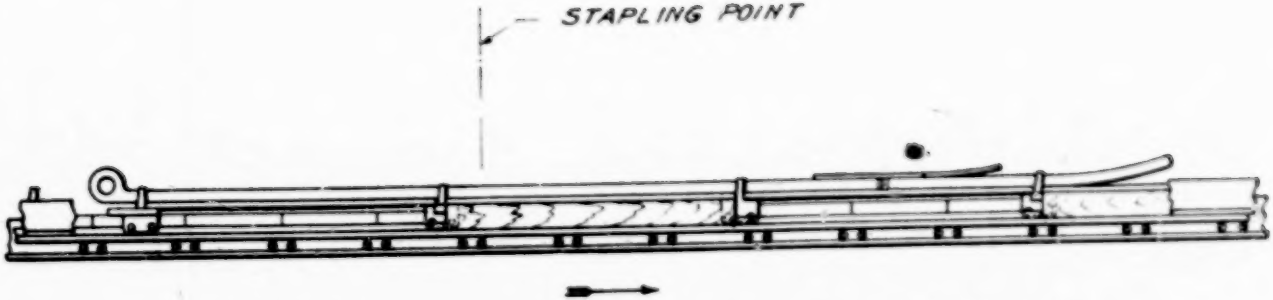
A. I don't know. X Q. 369 is based on the drawing wherein the biting of the wires into the corners is not very pronounced, and you can get that effect to some extent where the side pieces are spaced apart farther than indicated in my answer due to the fact that you cannot turn the heavy wire at right angle, and as a consequence the curve crushes into the corners a trifle, but this was an old effect not novel with Inwood and Lavenberg, and accordingly I do not think the claim could be construed broadly enough to cover such a limited tensioning action.

If in the method of X Q. 369 "the distance between the adjacent edges of the side pieces was substantially less than three times the thickness of the side pieces, and at least equal to twice the thickness of the side pieces," it is my understanding that the method would then respond to claim 13 of the method patent. The product of this method would not respond to claim 1 of the reissued patent in suit.

X Q. 390. In your direct testimony (typewritten page 8), you said:

"The patent in suit (you were referring here to the box reissue patent) distinguishes from the Rosback patent No. 623,258 only very slightly. If in Rosback the cut made by the saw were to extend clear through the veneer, and if the cleat were set back from the edge at both ends, the two patents would then show the same blank, but not the same method."

Do you mean by this that if you started with a single integral sheet big enough for all four sides of the box, and two integral strips of cleat material, each long enough for all four cleats at the end of the blank; and having assembled these three elements and wired them as dis-



PLAINTIFFS' DIAGRAMS SHEET 6.

REFERRED TO IN MR. McELROY'S DEPOSITION, DEFENDANT'S RECORD, PAGE 263.

closed in the Rosback patent, you then passed them through a step-mitering and sawing machine of proper character you could convert the previously rigid blank [fol. 904] into exactly the blank of the Inwood & Lavenberg reissue patent?

A. I believe I specified in considering a similar structure that the construction of the saws would have to be changed somewhat, and the saw that projects out farthest and the one which would cut through the veneer would have to be very thin, possibly thinner than would be practicable in order to produce a blank in which the edges of the side sheets were as close together as illustrated in the Inwood & Lavenberg reissue patent in suit. With this explanation, I will answer in the affirmative.

X Q. 391. Would the method explained in X Q. 390 respond to the claims, or any of them, of the method patents which are in suit?

A. I do not think any of the claims which I considered in my direct deposition are intended to be broad enough to include such a method.

(Here follows Plaintiffs' Diagram, sheet 5, side folio 904½.)

X Q. 392. Please refer to a photostat marked "Plaintiffs' Diagram, Sheet 6," which is simply a photostat enlargement of one of the figures in "Plaintiffs' Exhibit, Drawings of Defendant's Machine." For convenient reference I have colored sheet 6 to indicate the cleats of defendant's blank assembly in orange; the side sheets in blue; the cleat pushers in green; and the sheet pushers in red.

In defendant's practice how does the width of a side sheet (measured lengthwise the blank) compare with the distance between the two sheet pushers between which the sheet rests?

A. It is somewhat less.

X Q. 393. What do you mean by that?

A. The width of the side sheets must necessarily be somewhat less than the distance between the adjacent faces of the sheet pushers at either end thereof.

X Q. 394. What do you mean by "somewhat less"?

A. My impression is that in defendant's practice this varies a little from time to time. In order to answer you

definitely as to what they are doing now, I will have to inspect the machine and find out.

I have inspected defendant's machine and the making of blanks thereon. In defendant's machine, I do not recall precisely the difference between the width of the side sheets and the distance between the adjacent faces of the sheet pushers, but it was a small fraction of an inch. According to the practice at the time of my inspection, if defendant was employing a side sheet one foot wide, the distance between the two sheet pushers between which that side sheet was to be located, would be twelve inches and a [fol. 905] small fraction of an inch. I really do not remember the exact distance. I do remember that the sheet fitted in between them very easily, but for all I recollect now, it might have been anywhere between one thirty-second and a quarter of an inch. That particular at that time did not seem to me to be of any particular importance in the examination I was making. My recollection is that the side sheets which I saw on defendant's machine were three-sixteenths of an inch thick. I do not remember how thick the individual sheet pushers were from the front face to the rear face. I really expected to see the machine again before I was questioned as to these details, but I neglected to do so. If you will indicate all that you want to know about these details I will get the information for you.

XQ. 401. I am especially anxious to have this information as of the date when you made your inspection and before defendant was amply warned of the significance of these details. I wish you would give me your best recollection on the subject just inquired about.

A. I can see that it might have been anywhere between a sixteenth and three-sixteenths of an inch, but if you want me to guess at it, my recollection would be approximately an eighth of an inch. As to making sure what the practice was when I inspected the machine, I can only ask if there has been any change since that date, and I will doubtless be told the truth, for as far as I know, defendants have not considered these details as of the vital importance you seem to attribute to them.

I know that the side sheets fitted in easily between the sheet pushers, but I do not recall whether there was any

substantial play, as I do not recall testing it to see. In defendant's practice the rear end of each cleat is not necessarily so positioned as to be flush with the rear end of its side sheet when it is assembled. My recollection would be, however, at the time of stapling them they are. As to whether I am sure about that, I particularly noted that the cleats were put in the guides without any attention to bringing them against the co-operating cleat pushers, and that as the cleat pushers advanced, they necessarily overtook, so to speak, the cleats and engaged their rear ends. I did not at the time note what I then thought to be any substantial difference between the machine and the details of these drawings, and if the drawings are correct, the edges of the side sections would be flush on one side with the ends of the cleats, when they were being stapled.

X Q. 405. What on defendant's machine determines this [fol. 906] flush relationship of the rear sheet edge and the rear cleat end?

A. That depends on whether the working faces of the sheet pushers and the cleat pushers are in the same vertical plane, taken transversely of the machine.

X Q. 406. What determines the relationship, whether flush or not, between the rear sheet edge and the rear cleat end of defendant's machine?

A. Said working faces being in the same vertical plane, taken transversely of the machine.

I mean that the advance face of the sheet pusher and the advance face of the cleat pusher co-operate to determine the relationship between the rear sheet edge and the rear cleat end.

X Q. 408. Then, is it true that the advance face of a cleat pusher determines the position of the rear end of its cleat in relation to the corresponding sheet pusher?

A. The cleat pushers and sheet pushers are a part of the same flight element, so that as I understand your question, the answer would be affirmative.

In defendant's practice, one cleat pusher is separated from the next following cleat pusher a little more than the combined width of two adjacent side pieces. In defendant's machine the rear end of the first cleat and the rear end of the next following cleat for the same blank should be apart a little more than the combined width of two ad-

jacent side pieces. When the two cleats and their side sheets are being wired together by the stapling operation, the mechanical elements in defendant's machine which determine the relationship between the advance sheet and the next following cleat just described are the guides, the chains and the cleat pushers. When a cleat is placed in defendant's machine with its rear end say two inches from the next following cleat pusher, but the corresponding side sheet is placed upon the cleat with the rear sheet edge against the corresponding sheet pusher, the sheet and cleat are then correctly assembled to be stapled together so far as the hand work is concerned. The machine does the rest.

X Q. 413. Please answer whether or not they are correctly assembled to be stapled together.

A. I would answer that they are correctly assembled so far as the hand operation is concerned, in that any carelessness in the hand operation is corrected by the action of the machine so that they are correctly assembled when they pass beneath the staplers.

If the result of correct assembly is not produced by hand on defendant's machine, then the machine automatically [fol. 907] completes the correct assembly so that the rear cleat end and the rear sheet edge are thereby brought into proper relationship preparatory to the stapling operation. But the correct assembly is not completed until the rear cleat end is positioned against its cleat pusher and the rear sheet edge is positioned against its sheet pusher.

X Q. 416. You have already defined in general terms the intended distance between the rear end of the advance cleat and the rear end of the next following cleat of the same blank, in defendant's machine. What prevents the rear end of the advance cleat from moving toward the next following cleat?

A. There is nothing tending to make the advance cleat move toward the following cleat, but as I understand your question, you are calling attention to the fact that the cleat pusher keeps the cleat with which it co-operates in a certain fixed relationship to the following cleat after it has been engaged by its cleat pusher.

The two aligned cleats for one end of a blank in defendant's machine are not positioned in correct relationship to be wired together unless the rear end of each cleat is posi-

tioned against its cleat pusher. As to any of the boxes I saw, it is true that on defendant's machine the advance cleat is intended to assume parallelism with the next following cleat when the finished blank is folded.

X Q. 419. And defendant's machine produces blanks which when folded establish a predetermined relationship between the advance cleat and the next following cleat wired on the machine, which not only involves the parallelism just referred to, but also the location of the four cleat ends at substantially the four corners of a rectangle.

A. I don't quite see what you are driving at. If you take the corresponding end in each of the two pairs of cleats, their four ends would necessarily be the four corners of a rectangle.

In a blank made on defendant's machine and then folded into a four-sided box shape, the two cleats then standing at one end of the box have a predetermined relationship involving parallelism of those two cleats and the location of their four ends is substantially the angles of a rectangle. Also the two cleats referred to will not assume that predetermined relation unless on defendant's machine the rear ends of the respective cleats are positioned against their respective cleat pushers preparatory to wiring those cleats together. Unless these two aligned cleats are assembled (whether by hand or automatically) with their rear ends [fol. 908] positioned against their respective cleat pushers, those cleats will not fold into the desired predetermined relationship when the blank is folded. Certainly before they are stapled each side sheet in defendant's machine is positioned in a definite predetermined relationship to each of the other three side sheets.

X Q. 424. In the specific Inwood & Lavenberg machine the entire act of locating one cleat with reference to another must be performed by hand, assisted by the spacing blocks. Is that correct?

A. I am not prepared to say that some feeding machinery might not be employed which would automatically fill up the workholders as they were presented to it one by one, but nothing of the sort is disclosed in the Inwood & Lavenberg workholder patent, and it is fair to assume that the only thing they had in mind was a manual operation.

X Q. 425. But in defendant's machine the assembling of a cleat in predetermined relationship to another cleat may consist partly of a hand assembling operation and partly of an automatic assembling operation. Is that correct?

A. It may be done that way, but it looks to me as if it would be a fairly easy matter to make it entirely automatic, if they chose to do so.

X Q. 426. Confining your answer to defendant's current practice as you observed it, do you answer X Q. 425 in the affirmative?

A. Yes.

X Q. 427. In the Inwood & Lavenberg machine, as specifically disclosed in the machine patents in suit, the cleat assembling operation, performed by hand, consists in placing each cleat with its rear end adjacent the front face of a spacer block, and its front end adjacent the rear face of a spacer block. That is correct, is it not?

A. You might make it a trifle more accurate by substituting "against" for "adjacent." Otherwise it is all right.

In defendant's machine according to current practice, as I observed it, the cleat assembling operation performed by hand or partly by hand and partly automatically, consists in placing each cleat with its rear end adjacent the front face of a cleat pusher.

X Q. 429. In the specific Inwood & Lavenberg machine the spacing block against which the rear end of a cleat is positioned prevents retrograde movement of the cleat as it is advanced through the stapling operation?

[fol. 909] A. You might describe it that way if you want to.

X Q. 430. In defendant's current machine as you observed it, the cleat pusher against which the rear end of a cleat is positioned prevents retrograde movement of the cleat as it is advanced through the stapling operation.

A. I should say rather that it compels forward movement during the stapling operation.

X Q. 431. Do you say that it does not prevent retrograde movement?

A. I was trying to think what could tend to give it a retrograde movement. If there was anything, I suppose you could put it in that negative fashion, but I prefer the positive form of statement.

X Q. 432. In your direct testimony you refer to a friction exerted upon the cleats in defendant's machine by the stationary guides. Would that friction tend to produce the retrograde movement of a cleat in relation to the forwardly moving blank material?

A. In your efforts to make two radically different things look alike, it seems to me you are doing great violence to the customary usage of the English language. How a stationary element *per se* can produde movement of something directly contacting it is more than I can see. As I understand your question, I will answer it negatively.

It is true that in both the Inwood & Lavenberg machine and defendant's machine, the advance face of the spacer block in the one case and the cleat pusher in the other case prevents the properly positioned cleat from being displaced out of its proper position by movement in a direction toward the rear of the blank. In the specific Inwood & Lavenberg machine the rear face of a spacer block at the advance end of a cleat prevents that cleat from being displaced from its proper position by movement in a direction toward the advance end of the blank.

X Q. 435. In defendant's machine the friction on a cleat exerted by the stationary guides after the rear end of the cleat has been *positioned against its pusher*, prevents that cleat from being displaced from its proper position by movement in a direction toward the advance end of the blank. Is that correct?

A. Not in the same sense that it is prevented in the preceding question.

X Q. 36. Is there any greater difference than that in the Inwood & Lavenberg machine the displacement of the cleat in a forward direction is prevented by the positive resist- [fol. 910] ance of an interposed block, while in defendant's machine the same result is produced by the frictional resistance of the stationary guide?

A. To the frictional resistance I would add inertia. Otherwise it might be stated that way.

X Q. 437. Do you refer to the inertia of the cleat itself?

A. If it is at rest, yes.

X Q. 438. Do you refer to inertia of anything other than the cleat?

A. Well, in a sense the friction is due to inertia, but it all seems rather foolish and beside the real issue here.

X Q. 439. A stationary cleat in the Inwood & Lavenberg machine is just about as inert as a stationary cleat in defendant's machine, is it not?

A. Yes.

X Q. 440. Please point out where in the prior art you find in any single patent the disclosure of mechanical means by which to position two aligned cleats in predetermined relationship preparatory to wiring them together as parts of a foldable blank, with means by which to wire those cleats together.

A. My recollection is that no patent shows two such cleat pushers in alignment, but your question covers nothing more than the obvious duplication of the cleat pushers of the Rosback patents which would occur to anybody seeking to make a blank with what you are pleased to call preformed cleats.

X Q. 441. Then your position is, first, that there is no flat anticipation in the prior art of the Inwood & Lavenberg machine and, second, that it required no invention to produce the Inwood & Lavenberg machine in view of the Rosback machine?

A. Understanding that you are talking about the workholder patent, I would not put it quite that way. As I recall it, the specific structure shown in the workholder patent has some novelty, but if the claims intended to describe that novel construction be expanded so unwarrantably as to cover defendant's radically different machine, then in my opinion they are invalid as being substantially anticipated by the Rosback machine. Stated another way, in my opinion, the defendants in producing their machine followed the teachings of the Rosback patents with the modification necessary to produce the different type of blank, rather than the teachings of Inwood & Lavenberg.

X Q. 442. Is there any other patent in the prior art which [fol. 911] supports the argument you have just made, so well as the Rosback patents?

A. There are plenty of machines in the prior art employing a pair of chains with flights to push side pieces or some equivalent material, but as I recall it, flights to push cleats of the character in the controversy are rather scarce out?

side of the Rosback disclosures. I do not say that I have referred to all such pushers as exist, but only such as have been brought to my attention, as I did not make the search on prior art myself.

By Mr. Janney: I offer in evidence the six plaintiff's diagrams marked 1 to 6, inclusive, which have been referred to during this cross-examination.

Recross-examination.

By Mr. Janney:

R. X Q. 449. Have you seen any example of the Rosback box since our last session on Thursday?

A. No.

R. X Q. 450. Then since you have never seen a Rosback box at all, the final statement in your foregoing answer rests upon such conclusions as you have been able to draw from the Rosback patent?

A. That is correct, although I wish to add that I have learned something about the modern practice in cutting these veneer sheets that makes me more than ever of the opinion that the Rosback box in practice would not differ from that of the Inwood & Lavenberg reissue patent in suit except in the fact that the Inwood & Lavenberg wires would cut into the corners of the box much more deeply than would occur in the Rosback box. The method of manufacture or cutting these veneer sheets would practically insure that the grain would run substantially parallel with the axis of the box, so that it would be quite certain to split at the longitudinal edges through the thin film of veneer that theoretically remains in the Rosback box.

R. X Q. 451. Where did you get this alleged information?

A. It was given me by parties that I think know what the modern practice is of making veneers. My original supposition was that they still make them like they did when I was a boy by slicing them from blocks.

R. X Q. 452. Defendant's counsel has just told me off the record that he was the one who gave you the information referred to. That is correct, is it?

A. Yes.

R. X Q. 453. Do you mean to say that you deliberately [fol. 912] introduced this alleged information with the words "I have learned something about the modern practice in cutting these veneer sheets" and then made the flat statement that "the method of manufacture or cutting these veneer sheets would practically insure," etc., when of course you realized that the alleged information was the merest hearsay?

A. I am perfectly willing to admit that it is hearsay, but I have known Mr. Cox for many years as an honorable gentleman, and I know that he would not lie to me about it or even tell me a partial truth about it.

R. X Q. 454. I have no intention whatever to reflect upon Mr. Cox. My object was simply to make it clear on the record that you have not hesitated to make a statement of fact about which you knew nothing. Just what did Mr. Cox tell you?

A. He explained to me the modern practice of chucking, so to speak, sections of logs and peeling the veneer off in long sheets. This method would necessitate the grain running transversely of the sheet, and if it was good material, such as I assume would be used, without numerous knots, the grain resulting from an ordinary tree would necessarily be quite straight.

R. X Q. 455. What do you mean by "chucking"?

A. Mounting it into what would correspond to a lathe so that it rotates about the center of the log as an axis.

R. X Q. 456. By "peeling the veneer off in long sheets" do you intend to refer to the practice of making what is called "rotary cut veneer"?

A. I presume that is the designation, although it was not employed in our conversation. It appears to be quite apt, however.

R. X Q. 457. When you say "this method would necessitate the grain running transversely of the sheet," etc., is that what Mr. Cox told you or is it your own conclusion?

A. I do not recall just how detailed his description was, but I assumed that the log would be sawed transversely so as to make sections as long as the width of the box blanks.

R. X Q. 458. I asked you whether the substance of what I quoted in R. X Q. 457 was something that Mr. Cox told you

or was your own conclusion. Please give me an answer without evasion.

A. It was certainly my own conclusion, and I rather think Mr. Cox told me so, although I could not be sure of that.

I don't know how long this rotary cutting of veneer has [fol. 913] been practiced commercially, but would be interested to learn. I haven't any idea whether the rotary cutting of veneer was the general commercial practice during the time of development of the Rosback box. I know it was not the practice thirty-five years ago. I have never seen the process of making rotary cut veneer. I have never seen any veneer that I could guarantee was made by that method. I have seen plenty of veneer in connection with this litigation, and I assume that it was made by that method, but of course I do not know of my own knowledge whether it was.

R. X Q. 463. What tests have you performed to ascertain whether rotary-cut veneer has its grain disposed accurately enough transversely of the sheet to render it "quite certain to split at the longitudinal edges through the thin film of veneer that theoretically remains in the Rosback box"?

A. The trouble in answering that question is that I do not know how some sheets of veneer that I split by bending them were made. I would assume that they were made by the rotary-cut method but of course I do not know.

R. X Q. 464. That does not answer the question at all. Please give me an answer.

A. I was trying to tell the whole truth about the matter by stating that I did not know how the several pieces of veneer that I split by hand were made. I could not answer the question accurately unless I knew where all the veneer came from, and I would not care to say that I have made what as an engineer I would call "tests" to establish the proposition unless I had gone at the matter much more carefully and scientifically than I did.

I split three different pieces of veneer by hand last week; some in your office that I recall. That was all that I was talking about. The veneer which I split was three-sixteenths of an inch thick or approximately so.

R. X Q. 470. Isn't it a fact that when you split veneer in my office, as you have stated, you bent and split the veneer which constituted a side sheet of a small model box blank?

A. It was not as large as most boxes I have seen, but it may have been intended as a model. I do not now recall just how long it was.

R. X Q. 471. Do you recall that the width of the veneer which you split, measuring lengthwise of the grain, was not more than about two feet.

A. I do not recall the exact dimensions, but I am quite sure it was less than two feet.

[fol. 914] R. X Q. 472. Then your actual knowledge of what might occur in practice as to this splitting of the veneer rests upon what you observed as to that splitting in my office?

A. We were talking about something in the nature of tests. I used to use quite a good deal of veneer when I was a boy in making what we used to call in those days "scroll-saw work," and I sawed a good many different kinds of wood then that were veneers. Of course the splitting depends upon several factors, such as the thickness, the dryness, the straightness of the grain, and what I might call the natural toughness of the wood. While I have made no elaborate tests such as you suggest should be made before making any statement relative to the action of the Rosback boxes, I do not consider that such tests were at all necessary because if the Rosback boxes were ever made in any quantity, it was bound to occur at times that all the conditions necessary to insure the splitting of the grain would occur, and if that occurred occasionally, even once in a hundred times, that would be sufficient to warrant the statement as to what might occur in the prior art. For the purposes of anticipation it is not necessary that every Rosback box that was ever made would split. It would be sufficient if it occurred occasionally.

R. X Q. 473. The argument you have just indulged in is quite beside the point. I have been trying to develop the reasoning upon which you were willing to make the flat statement, which has no foundation in fact, that "the method of manufacture for cutting these veneer sheets would practically insure that the grain would run substantially parallel to the axis of the box, so that it would be quite certain to split at the longitudinal edges," etc. That statement, as you have admitted, was based upon a bare

oral description to you of the rotary cutting of veneer. You admit that you have never made any tests to verify your speculative conclusion except the splitting of some veneer in my office during the course of your cross-examination. It is quite evident that you are grossly ignorant of the subject upon which you have pretended to be adequately informed. What means have you taken to verify the accuracy of your conclusion before stating it unequivocally as a matter of fact in the answer just quoted above? I call your attention to your admission that, even as to the splitting of veneer in my office, you did not then know whether you were splitting rotary-cut veneer or not.

A. In making the statement which I did which you have [fol. 915] quoted in your question, I should have employed the word "sometimes" so that the last quoted clause would read: "so that it would be quite certain sometimes to split at the longitudinal edges," etc. In spite of your police court methods the answer as just modified would unquestionably be absolutely accurate, and if it happened occasionally, as before stated, that is often enough where the question of anticipation is involved. While my statement may have been a little broader than it should be, so far as its pertinency is concerned it is absolutely all right. The only objection I have to it is that it gave an excuse for offering this tirade about gross ignorance, etc.

R. X Q. 474. Then you are perfectly content to let your answer to X Q. 450 stand to the effect that the rotary cutting method "would practically insure that the grain would run substantially parallel with the axis of the box"?

A. With the word "sometimes" inserted in that answer there could be no question as to its truthfulness as a matter of fact, although you will note that I said that it "makes me more than ever of the opinion that the Rosback box," etc. The method would insure that the general direction of the grain was along the length of a completed box, and it is too much to suppose that the grain would never be exactly parallel with the axis of the box.

R. X Q. 475. Your statement of opinion in R. X Q. 450 related to the alleged similarity of the Inwood & Lavenberg reissue patent and the Rosback box. Your statement as to "the method of manufacture," etc., was in a separate

sentence and was presented as a statement of fact. I now ask you again, repeating my inquiry of R. X Q. 473, "what means have you taken to verify the accuracy of your conclusion before stating it unequivocally as a matter of fact?"

A. If you mean that I have gone out and watched the practice of the method of making veneer and taken some of the veneer thus made and made it up into a Rosback box by the Rosback method, which would be what I take it you would consider a satisfactory test, of course I have not done so. I still insist, however, that as a matter of common sense, when my statement which you so object to is modified by the word "sometimes," there can be no question as to its accuracy and truthfulness.

R. X Q. 476. You are still evading my question. I want to know what, if anything, you did to verify your conclu- [fol. 916] sions before presuming to state same unequivocally as a fact.

A. I have already discussed this matter as much as I propose to, as it is sheer waste of time to keep repeating it. You should know what the facts are from what I have already answered, and if you cannot ascertain from that, I cannot make it any clearer.

R. X Q. 477. I insist upon your describing what, if anything, you did to verify your conclusion before stating it unequivocally as a fact. If you did anything, state what you did; if you did nothing, say so frankly.

A. I have already told you what I have done. I am under the impression that I have already told you that I have made no test with this particular matter in view. I have testified from my knowledge of the materials under consideration—patents, etc.—without making any specific tests, as I said, with this question in view.

R. X Q. 478. I show you the small box blank which you split in my office, as you have described. Note that at one place the veneer is cut by sawing while in the other two places the veneer was split by you. Do you recognize that as the blank which you split?

A. It may be. It looks like it. I note the fact that it is not made in accordance with teachings of the Rosback patent, because there were no grooves in the veneer along the lines where it was to be bent.

R. X Q. 479. Does the manner of splitting the veneer in this blank verify the conclusion which you stated as a fact in your answer to R. X Q. 450?

A. Substantially, but not entirely. The grain in that veneer is not perfectly straight.

R. X Q. 480. Explain just how the splitting of the veneer in this blank verifies in any degree the conclusion stated by you as a fact, to which we have been referring.

A. It shows that it splits along the grain of the veneer, and if the grain is perfectly straight and parallel with the longitudinal axis of the box, it would split in the manner described.

R. X Q. 481. The difficulty with this answer is that the hypothesis which you introduce by the word "if" is the conclusion which you presumed to state as a fact in answering R. X Q. 450. Does the method of splitting exhibited in this blank verify your conclusion that "the method of manufacture or cutting these veneer sheets would practically insure that the grain would run substantially parallel with the axis of the box"?

A. I would say that this blank proves nothing on that method of manufacture. Judging from the grain as seen [fol. 917] on its faces, I should say that it is not made by any rotary cut method.

R. X Q. 482. Then, is it a fact that in this blank the grain does not "run substantially parallel with the axis of the box" in the sense in which you have used that expression in answering X Q. 450?

A. It might in one or two spots, but in general it does not, and it does not where it has been split.

R. X Q. 483. What do you observe on the veneer of this blank to lead you to say "that it was not made by any rotary cut method"?

A. What I had in mind was this: On one face no less than twelve wavy lines transversely of the length of the veneer are exposed, and unless I am much mistaken these wavy lines represent where the knife has cut through from the layer produced by one year's growth into the next. As I understand the rotary-cut method, unless the tree trunk tapers a good deal faster than that of any ordinary tree, I cannot see how the knife could possibly cut across so many

of these lines if it were set substantially parallel to them, as I would understand that it would necessarily have to be in practicing this rotary-cut method.

I would not care to say definitely whether or not the veneer in this blank is rotary cut, because I might be mistaken. If there was any way of arriving at the facts through disinterested parties, I would be willing to bet it is not.

R. X Q. 485. If we assume that the veneer on this blank is rotary-cut veneer, and that the manner of splitting illustrated in the blank is typical of rotary-cut veneer as used for side sheet material in wirebound boxes, would this blank tend to verify the conclusion which you stated as a fact in the last sentence of your answer to R. X Q. 450?

A. This specific blank would not, but I take that it is not as straight a grain blank as is sometimes met with in practice.

R. X Q. 486. Then it follows, as I understand you, that the only instance in which you yourself have ever split what may be rotary-cut veneer in a box-blank, itself fails to verify the conclusion which you stated in answer to R. X Q. 450?

A. In the absence of proof that that is a rotary-cut veneer, this instance proves nothing. That is the best answer I can give.

R. X Q. 487. Assume that it is a rotary-cut veneer, and then answer the question.

[fol. 918] A. It shows that the statement I originally made should be qualified by the insertion of "sometimes," as I have already suggested.

R. X Q. 488. But you yourself have never actually seen a piece of veneer split in such a way as would come within the conclusion which you stated as a fact in answering X Q. 450, even when your statement is revised by inserting the word "sometimes," as you have suggested?

A. I cannot say that I have ever seen such a piece of veneer used in connection with the wirebound box art, but neither can I say that I never have seen such a piece.

By Mr. Janney: Plaintiff's counsel offers in evidence the box-blank which was split by this witness, and has been

referred to in the foregoing questions, to be marked "Plaintiff's Cross-Exhibit X."

R. X Q. 489. Please refer to Fig. 1 of the workholder patent in suit, No. 1,128,144. If all the elements shown in this workholder were employed, in the same relationships there shown, except that the longitudinal members 4 are articulated and incorporated in an endless chain suitably supported upon sprocket-wheels or the like; and assuming that the longitudinal bar 14 is omitted and its function performed by some separate means for pressing down the side sheets to hold them in place.

I intend that the hypothetical structure shall involve the same elements and functions and features of co-operation indicated in the workholder patent in suit, excepting only that the mechanical elements shall be articulated and incorporated in endless chains.

Would this structure respond to the terms of claim 39, for example, of patent No. 1,128,144?

A. I had too much trouble with misunderstanding hypothetical structures last week that were materially simpler than this one you now suggest, and as I might very well misunderstand what you have in mind, I must request that you make a drawing so complete that there can be no misunderstanding as to just what the hypothetical structure is.

R. X Q. 490. To avoid a misunderstanding, I will withdraw my next preceding question, and ask you to refer to the Craig patent No. 864,955, and particularly to Figs. 5, 6 and 7 thereof. Does the workholder there shown respond to claim 39 of the Inwood & Lavenberg patent No. 1,128,144? I note that this is one of the patents enumerated by defendant's counsel among those to which he expects to refer at the trial of this suit, according to notice given by him at the opening of plaintiff's prima facie depositions in Washington, D. C., October 18, 1922. This patent was offered in evidence at this morning's session by defendant, and marked "Defendant's Exhibit J."

[fol. 919]

A. Seemingly.

R. X Q. 491. What reservations have you in mind when you say "seemingly"?

A. I did not examine the file history of this patent with any such structure as this Craig patent in mind as a possible

infringement thereof, and consequently do not recall whether the file history would impose any limitations that might have a bearing on the question.

R. X Q. 492. Please consider the Craig patent referred to, and claim 39 of the Inwood & Lavenberg patent No. 1,128,144, to be simply descriptions of mechanisms; and confine your answer to a comparison of the respective mechanisms, as such, disclosed in those two places. Do you find those two mechanisms to be substantial mechanical equivalents or not?

A. Broadly speaking, they have the same ultimate function—that of aiding in the assembly and manufacture of wirebound boxes. However, they are a long ways from being full mechanical equivalents, because they are manipulated, or rather employed, in a different manner.

Disregarding any effect which the file-wrapper may have upon claim 39 of the Inwood & Lavenberg patent No. 1,128,144, and considering simply the face value of that claim, the workholding mechanism of this Craig patent responds to the claim, assuming that the claim is to be construed broadly and disregarding any limitations that might be enforced upon it by the prior art as well as the file-wrapper.

R. X. Q. 493a. I show you a sketch marked "Plaintiff's Cross-Exhibit Y." Please consider this in connection with Figs. 33 and 34 of the Rosback patent 608,796. The Cross-Exhibit Y sketch shows exactly the chain H' of this Rosback patent, but the pusher H'' of the patent has been removed and five spacer blocks have been secured to each of the Rosback chains, as indicated in Cross-Exhibit Y, these spacer blocks having exactly the same relation to each other as shown in Fig. 1 of the Inwood & Lavenberg patent No. 1,128,145.

(Here follows Plaintiffs' Cross-Exhibit Y, side folio 919½.)

Except for the removal of the Rosback pushers H'', and the application to the chains of the spacer blocks shown in Cross-Exhibit Y, I assume exactly the construction shown in the Rosback patent 608,796.

Would the described construction respond to claim 39 [fol. 920] of said Inwood & Lavenberg patent, disregarding any effect thereon which the file-wrapper might have?

PLAINTIFFS' CROSS EXHIBIT Y

A. The question is getting somewhat more uncertain as to the possible correct answer, but I do note that this cross-exhibit shows five elements which seem to correspond somewhat roughly, although lacking the feature of adjustability to the spacer block elements of the Inwood & Lavenberg patent inquired about. Assuming the same conditions as in my answer to the immediately preceding question, the answer would seem to be affirmative, except that I question seriously whether this modification would work, whereas the structure of the Craig patent apparently is operative. So far as the mere terms are concerned, I would answer the question affirmatively, but because I do not believe it is operative, I think it should be answered negatively.

To explain why I consider the described construction inoperative, as I understand it, the spacer blocks you have illustrated are intended as a substitute for and to operate in the same manner as the blocks 6 and 7 in the Inwood & Lavenberg patent No. 1,128,144. In this substantially different structure, the sheets B abut at their edges, as seen in Fig. 5, and are only held in place by the action of the bail 14. With the modification shown in your cross-exhibit drawing, these sheets B would have their edges pressed up against the under side of the stationary flange letter S' and S' in Fig. 27, and the friction of these flanges would seemingly misplace the side sheet material relative to the cleats.

R. X Q. 495. Of course, claim 39 makes no reference to the side sheets or to any means for positioning them, but is obviously directed to an organization characterized by the described cleat positioning means. My question R. X Q. 493 is in substance whether the described modified Rosback machine would embody the cleat positioning and spacing characteristics referred to in the claim. Please answer R. X Q. 493 on this understanding.

A. If the device will not take care of the side sheets, it is for an incomplete and inoperative combination, as it would, so far as I can see, have no utility. Disregarding the question of inoperativeness and lack of utility, the answer would be the explanation I made in answering the immediately preceding question—affirmative.

R. X Q. 496. Please consider claim 39 of the Inwood & Lavenberg patent No. 1,128,144 in the light of any limita-

tions thereon which you consider to be imposed by the prior art, and then state whether or not the work holding mecha- [fol. 921] nism of the Craig patent No. 864,355 responds to that claim so considered.

A. It is a question in my mind, in view of the disclosure of the Fuller patent 694,467, whether or not claims on this workholder should not be limited to the specific form shown where you have a stationary carriage member upon which all the wooden elements are assembled before the work holder is taken to the stapling machine. The structure of this Fuller patent, while it makes only one side of a box, so to speak, that is to say, the lid of a basket, nevertheless very closely resembles in its general construction and mode of operation the work holding portion of the Craig patent inquired about. It has in the series of four pairs of links and the positioning mechanism associated therewith the equivalent of "cleat positioning means" to receive a plurality of cleats disposed substantially end to end, in the supports for the segments "K" of the box lid, which segments correspond to the cleats of the box, and it has in the elements M and N, "means to space endwise apart one said cleat (segment K) for a given side of the box" and in the second set of links therefrom the means to engage the "another cleat or non adjacent side of the box, a distance appropriate to the dimension of a desired intervening box side." Of course I do not mean by this that the box lids of the Fuller device are "folded and secured together in making boxes" or that boxes of the character under discussion could be made on this Fuller device without redesigning some of the engaging elements but what I do mean is that considered as a mechanism, and considering its general purposes, this Fuller device comes so close to being what is shown in the Craig patent under consideration that it becomes a question as to whether or not if claim 39 of the Inwood & Lavenberg patent 1,128,144 be construed broadly enough to cover the different structure of the Craig patent inquired about, it is not so unduly expanded as to be anticipated as lacking invention over what is shown in this Fuller patent 694,467. I should be considerably puzzled as to what to do in that case, but unless the equities were against complainant, I would probably give him the benefit of the doubt.

R. X Q. 497. Does the Fuller patent you have referred to disclose mechanical elements for holding two cleats substantially end to end in a predetermined relationship from which they may be folded into box form, and so holding the cleats while they are flexibly connected by wire?

A. The segments corresponding to the cleats are not flexibly connected by wire, but that was an old operation as shown in the Rosback patents. It does show the top [fol. 922] strips J as nailed to the segments K, an operation which corresponds to the stapling of the sides and wires to the cleats in the Inwood & Lavenberg patents in suit.

It is true that the product of this Fuller machine consists of a succession of entirely separate basket tops intended to be used each on a separate basket, each top being a substantially rigid unit, and the tops having no relationship whatever, foldable or otherwise to each other. Disregarding the mere question of convenient compactness of the machine and economical utilization of the chains, so far as the ultimate product is concerned, it makes no difference whether the work holding means in the Fuller patent positions the elements for one basket top one inch or one foot from the elements for another basket top.

R. X Q. 500. I have added to Plaintiff's Cross-Exhibit Y a sheet pusher (P) and have drawn an arrow to indicate that the illustrated chain is intended to move towards the right. If this chain, as I have already described it, were incorporated in the Rosback machine of patent No. 608,796, as assumed in R. X Q. 493a, would the sheet pusher P suffice to avoid the possible inoperativeness which you complained of in your earlier answers?

A. I can't tell from the side elevation. I would have to have a cross-section.

R. X Q. 501. For the purpose of considering claim 39 of the Inwood & Lavenberg patent, 1,128,144, I ask you to assume that the sheet pusher P in the Cross-Exhibit Y would avoid the alleged inoperativeness of which you have complained. With this assumption please consider identically the Rosback machine as illustrated in Figs. 33 and 34 of patent No. 608,796, modified only in that the pusher H[c] is removed and the spacer blocks are secured to each chain as indicated in the Cross-Exhibit Y.

Now please consider claim 39 in the light of any limitations thereon which you consider to be imposed by the prior art, and then state whether or not the work-holding mechanism of the modified Rosback machine as just described responds to said claim 39?

A. Your question is expanding, so to speak, the scope of this claim 39 to a point where it becomes very doubtful as to whether or not it discloses any patentable novelty. As read on the specific disclosure of the Inwood & Lavenberg patent, it does define a novel structure, but you have now expanded it to a point where it becomes a question as to whether or not it defines anything that is patentable over what is shown in the Rosback patents, more especially in view of the fact that it is also the practice to make boxes [fol. 923] with so-called preformed cleats which your modified Rosback structure is intended to receive. I hardly believe I would feel justified in expanding claim 39 to a point where it would cover the hypothetical structure now inquired about.

R. X Q. 502. It must be quite obvious to you that my question has expanded nothing. I asked you a perfectly simple question as to whether claim 39, in view of the prior art, is responded to by the described modified Rosback machine. If you have a definite opinion one way or the other, please so state; but if you have no definite opinion please say so frankly.

A. It does not, for the reasons I gave in my answer to the immediately preceding question.

By the last answer I mean that the described modified Rosback machine does not respond to claim 39 for the reasons I have stated.

In the workholder patent in suit No. 1,128,144 the parts generally designated by the reference numeral 1 hold the cleats for each end of the box aligned in single file so that they may be passed beneath the stapler in proper alignment. The supporting bars I and *and* the angle irons H in plaintiffs' drawing of defendant's machine hold the two cleats for each end of the box aligned in single file so that they may be passed beneath the stapler in proper alignment.

R. X Q. 506. In defendant's machine, if a cleat were placed in the guides with its rear end spaced say two inches

from the cleat pusher which is intended to carry it through the machine, and while the cleat is thus displaced from its pusher, a side sheet is superposed on that cleat in normal contact therewith—would the friction between the cleat and the smooth metal guides be sufficient to overcome the friction between the side sheet and cleat so that the cleat would lag sufficiently for the cleat pusher to overtake it?

A. I could not be absolutely certain about that, but I think so. I do remember observing the cleats positioned in advance of their pushers and being caught up, as it were, by the pushers when they reached it, but if the cleats had been fully covered by the side sheets, I could not have seen them and consequently I do not believe I saw the exact condition set out in your question occur.

R. X Q. 506a. Then you are not sure what would happen under the conditions I described?

A. I would not want to say for an absolute certainty without testing the matter, but I think it more than likely [fol. 924] the machine is arranged so as to take care of that contingency.

R. X Q. 507. How do you suppose the machine is arranged to take of that contingency.

A. I would expect it to have some retarding springs engaged with the cleats and prevent their movement until they were actually contacted by the cleat pushers.

R. X Q. 508. Has defendant's machine such retarding spring?

A. I could not be certain without investigating but I would think so.

R. X Q. 509. In the absence of such retarding springs what would happen under the conditions which I described?

A. I could not say for certain. If the ends of the side sheets did not fit down rather closely upon the tops of the cleats so that the adjacent surfaces were brought in rather intimate contact, I would expect the cleat to stay on the rail until the cleat pusher engaged it. If, on the other hand, the under side of the sheet was in intimate contact with the top of the cleat, and there were no retarding springs, it looks as if the cleats would travel with the sheet.

R. X Q. 510. Which of these two conditions that you

have just described actually prevails normally in defendant's machine?

A. I don't know.

R. X Q. 511. Then you don't know whether in defendant's machine it is necessary or not that the cleat be accurately positioned against its pusher before the side sheet is placed on top of it?

A. I certainly got the impression that it did not matter from watching the operation of the machine, but until I examine it again with this matter in mind, I would not care to say definitely because I do not want to misinform the court.

R. X Q. 512. Then when in your answer to R. D Q. 443 you said as to the cleats in the Inwood & Lavenberg machine "they are necessarily accurately positioned when the side sheets are placed on top of them"—you did not intend to indicate by those words that they represented a clear and ascertained distinction from the mode of operation of defendant's machine. Is that correct?

A. Yes, I think I had such a distinction in mind, but until I again examined defendant's machine with that particular matter in mind, I would not be absolutely certain that the distinction is justified when stated so precisely as it is there. I do know that the cleats can be placed some- [fol. 925] what carelessly, as it were, in defendant's machine, and be properly positioned by the action of the cleat pushers, but until I inspect the machine again I cannot be absolutely certain that that is so if the side sheets are placed on top of them before they are struck by the cleat pushers, although I think it is so.

Recross-examination.

By Mr. Janney:

R. X Q. 526. In answering R. D. Q. 522 you said, referring to the operation of defendant's machine, that the cleats "were advanced by the cleat pushers carried by the feed chains before the side sheets were put over them between the sheet pushers." In what percentage, approximately, of the instances which you actually observed, were the cleats thus finally positioned against there respective cleat pushers, before the corresponding side sheet was assembled upon the cleat?

A. I could not say from actual observation, as I did not have that particular question in mind.

R. X Q. 527. What is your best recollection on the subject?

A. The trouble is, I would rather say what must have happened if the workmen assembled the material all the time in the manner in which I think they intended to. If they did, it would be substantially all the time.

R. X Q. 528. Then, as I understand you, your observation of the actual positioning of the cleats in at least some instances, and your conclusions as to what must have happened from the method of feeding by the attendants as you observed it—satisfy you that it was the regular and normal practice in defendant's machine that each cleat was finally positioned against its cleat pusher before the corresponding side sheet was assembled on the cleat. Is that correct?

A. If by that you mean that each cleat pusher necessarily engaged with the adjacent end of its co-operating cleat before the co-operating side sheet was put over it, as I recall, what I understand the normal operation of the machine, that would be so.

R. X Q. 529. In other words, in defendant's machine, as you understand its operation, the cleats are necessarily accurately positioned when the side sheets are placed on top of them. Is that correct?

A. I would not care to say that they were "necessarily" so positioned, but I think they were so positioned.

R. X Q. 530. But in your answer to R. X Q. 528, you used [fol. 926] the word "necessarily" in just the sense in which I have used it, did you not?

A. Not precisely, or possibly I have misinterpreted your use of the word. What I meant was in answering R. X Q. 528 that if the cleats and sheets were laid on by their respective attendants in the order I had indicated, each cleat pusher "necessarily" engaged the adjacent end, etc., whereas I thought you might have in mind that the machine could not operate correctly unless this were so.

R. X Q. 531. Then, disregarding the word "necessarily," do you, or do you not, say that in defendant's machine, as a matter of normal practice, the cleats are accurately positioned when the side sheets are placed on top of them?

A. I believe that would be true.

R. X Q. 532. Then, please explain what is the force of the pretended distinction between plaintiffs' patent machines and defendant's machine, which you had in mind in answering R. D. Q. 443, when you said that in the Inwood & Lavenberg the cleats "are necessarily accurately positioned when the side sheets are placed on top of them." As I understand it, the only difference is that you consider it necessary to position the cleats accurately in the Inwood & Lavenberg machine, while the cleats are in fact thus positioned accurately in defendant's machine, whether necessary or not.

A. That is not a clear statement of the fact. With the Inwood & Lavenberg stationary workholder, you cannot do anything but position the cleats accurately therein, as they are engaged at both ends by the spacer blocks, and you can't put them anywhere else except right between the spacer blocks, where they immediately engage them at both ends of the cleat. In defendant's machine, so to speak, you only have one cleat pusher to engage the cleat, and that is spaced so far from the next one that the cleat may be laid down on its stationary support several inches away from the then position of its co-operating cleat pusher. No accuracy is either compelled or required about this manual location of the cleat in defendant's machine, because any error, if it be called such, in positioning the cleat is automatically taken care of by the machine when the cleat is fed forward toward the stapling mechanism.

R. X Q. 533. Of course, your answer is not directed at all to the subject-matter of the question. In your answer to R. D. Q. 443 you said:

[fol. 927] "The principle or mode of operation involved in complainant's machine patents and method, and in defendant's machine and method, are radically different, as I think I pointed out in my direct deposition in detail. Taking up the workholder patent, for instance, the principle there involved is that of a workholder with stationary spacing blocks into which the cleats are placed so that both ends thereof contact with the spacer blocks and they are necessarily accurately positioned when the side sheets are placed on top of them," etc.

You have said that in defendant's machine, as a matter of observed practice in the feeding and movement of the

cleats; the cleats are "accurately positioned when the side sheets are placed on top of them." So far as these effects of accurately positioning the cleats are concerned, are there any differences between the Inwood & Lavenberg machine and defendant's machine, except these: In the Inwood & Lavenberg machine the cleat is "accurately positioned" against a following spacer block entirely by hand, and held in that position by the spacer block at its advance end, while in defendant's machine the cleat is "accurately positioned" against a following cleat pusher partly by hand and partly automatically, or altogether by hand, and is held in that position, as you have suggested, by the friction of the cleat against the stationary guideways.

A. On this one point of just how the cleat is held in position after it has been finally assembled with its associated elements prior to being passed beneath the staplers, I should say your statement is accurate.

R. X Q. 534. You have several times asserted that cleats introduced into the Inwood & Lavenberg workholder contact with the spacer blocks at both ends of the cleats. Do you mean to say that it is essential to the operation of the Inwood & Lavenberg workholder, that the cleats shall be cut with such accuracy that they shall each contact at its ends with the two spacer blocks?

A. It is, if you are going to practice the Inwood & Lavenberg invention to secure the degree of tensioning of the wires shown in dotted line position of Fig. 4 in the Inwood & Lavenberg reissue patent.

R. X Q. 535. Then, if in the use of the Inwood & Lavenberg workholder you employed cleats each of which is one-eighth of an inch shorter than the distance between adjacent spacer blocks, would you then be utilizing the invention of the workholder patent in suit?

[fol. 928] A. Certainly not, in the full manner contemplated by said patent. The only substantial novelty I have been able to find about this alleged invention in controversy is the specific structure, or method, or what not, by which the wires are tensioned and bite into the corners in the manner shown in dotted lines in Fig. 4 of the reissue patent, and the Inwood & Lavenberg workholder is obviously designed to enable them to get just this effect, as getting just this effect demands that the cleats be of a precise

length and that they be positioned in a precise relation relative to the sheets and to the wires which bind them together in the blank. Without having the spacer blocks accurately adjusted so that they will engage cleats of the proper length at both ends when the cleats are introduced into the workholder, you cannot be sure that you are going to get the exact reaction between the cleat ends that is necessary to get the high degree of tensioning and biting in of the wires shown in dotted lines in Fig. 4 of the reissue patent. This Inwood & Lavenberg workholder not only insures that the cleats be properly positioned relative to each other, but its structure is such that it discloses to the workman at once if he is furnished a cleat that happens to be too short, because in that case it will not engage the spacer blocks at both ends and will be free to shift longitudinally in the workholder when it is placed therein.

R. X Q. 536. Then, as I understand your reasoning, one might use identically the Inwood & Lavenberg workholder, but he would be quite free from infringement of the Inwood & Lavenberg workholder patent in suit, if only he employed cleats one-eighth of an inch shorter than the distance between adjacent spacer blocks, and were content to get along with the lesser degree of tensioning of the wires which you say would result from this use of the slightly shortened cleats. Is that correct?

A. Certainly not. You do not distinguish between the workholder patent and the method patent, which is not to be wondered at.

R. X Q. 537. R. X Q. 535 asked you particularly whether in the described use of the shortened cleats you would be utilizing the invention of the workholder patent in suit. Nothing was said about the method patent. Please re-read R. X Q. 535 and answer it "yes" or "no," followed by any qualification you wish to make.

A. I answer "no." If one has a piece of machinery to which he has no right, i. e., because he obtained it as an infringement, I see no real reason why he would not still [fol. 929] be guilty of infringement if he used the device imperfectly.

R. X Q. 538. Then, although in one answer you say that the employment of the Inwood & Lavenberg workholder with the described shortened cleats would not constitute a utilization of the invention of the workholder patent in

suit, nevertheless you say in another answer that such a use would not be free from infringement of the workholder patent in suit. In order to straighten this out, please state whether the workholder patent in suit would be infringed by the unlicensed use of the exact Inwood & Lavenberg workholder but employing cleats each one-eighth inch shorter than the distance between adjacent spacer blocks.

A. For some reason or other you seemingly deliberately choose to misinterpret my answers. I at no time intended to say that such a use of the workholder would not infringe the patent, although I did intend to convey the idea that it was not utilizing the invention as fully as it might be utilized. You might about as well claim that a poor marksman who always missed his target was not infringing a patented shotgun when he was using it because he is a poor marksman.

R. X Q. 539. Of course if the cleats, shortened as described, were employed in the Inwood & Lavenberg workholder, the cleat would contact with the spacer block at only one end. That is correct, is it not?

A. No. It might contact at neither end.

R. X Q. 540. It could not contact at both ends, could it?

A. No.

R. X Q. 541. Then let us assume the use of the exact Inwood & Lavenberg workholder with cleats one-eighth inch shorter than the distance between adjacent spacer blocks. Assume that the operator places each cleat with its rear end accurately positioned against its rear spacer block, and then superposes the side sheets and clamps them down by the bail.

Thereafter when the blank assembled in the manner just described is advanced through the stapling machine, would the friction of the side sheets against the cleats suffice to hold the cleats accurately positioned?

A. Presumably, but I would not call them accurately positioned. That is to say it would hold them where they were put.

R. X Q. 542. In the exact circumstances which I have described in my next preceding question, the rear faces of [fol. 930] the spacer blocks would be at least temporarily functionless?

A. In the misuse described, that would be true.

R. X Q. 543. Would this "misuse" as you have called it, constitute an infringement of the workholder patent in suit?

A. Assuming that the user was unlicensed, I should say so as I do not know that the law requires anybody to be a 100 per cent. man when it comes to infringement.

By Mr. Janney: Pursuant to a stipulation between the parties hereto, to the effect that either party may offer in evidence all or any part or parts of the evidence presented in certain records including Wirebounds Patents Company and 4-One Box Machine Makers vs. H. R. Gibbons Box Company, in Equity No. 2689, in the Northern District of Illinois, Eastern Division, plaintiffs offer in evidence as Plaintiffs' Exhibit No. 26 the Record on Motion for Preliminary Injunction in said suit of Wirebounds Patents Company and 4-One Box Machine Makers vs. H. R. Gibbons Box Company.

Conclusion of proceedings at first hearing under the original and first supplemental bills of complaint and the answers thereto.

[fol. 931] PROCEEDINGS AT THE SECOND HEARING UNDER PLAINTIFFS' SECOND SUPPLEMENTAL BILL OF COMPLAINT AND THE ANSWER THERETO

Be it remembered that on the trial of the above-entitled cause under the Second Supplemental Bill of Complaint and Answer, in the District Court of the United States for the Western District of Michigan, Southern Division at the October 1926 Term thereof, at Grand Rapids, Michigan, before the Honorable Fred M. Raymond, a judge of said court, the following proceedings were had:

Trial commenced October 22, 1926.

Appearances: Messrs. Emery, Booth, Janney & Varney, by Mr. Laurence A. Janney and Mr. Howard S. Laughlin, and Messrs. Knappen, Uhl & Bryant, on behalf of plaintiffs. Messrs. Cheever & Cox, by Mr. Dwight B. Cheever and Mr. Howard M. Cox, and Messrs. Rice & Rice, on behalf of defendant.

It was explained on behalf of plaintiffs and defendant that the testimony was presented in deposition form, and printed copies of said depositions together with the exhibits offered in evidence and the stipulations contained therein, were offered and received in evidence.

PRIMA FACIE EVIDENCE ON BEHALF OF PLAINTIFFS

Plaintiffs' prima facie proofs under said Second Supplemental Bill, beginning June 28, 1926, at the offices of Emery, Booth, Janney & Varney, 10 South La Salle Street, Chicago, Illinois.

Appearances: Laurence A. Janney, Esq., Howard S. Laughlin, Esq., for plaintiffs; Howard M. Cox, Esq., for defendant.

By Mr. Janney: I offer in evidence the stipulation dated June 25, 1926, as follows; and I also offer in evidence the drawings Plaintiffs' Exhibits Nos. 28 and 29, the positioning blocks Plaintiffs' Exhibits Nos. 30 and 31, the photographs Plaintiffs' Exhibits Nos. 32 and 33, all as referred to and identified in the following stipulation:

[fol. 932] STIPULATION FOR USE AS A PART OF THE RECORD UNDER THE SECOND SUPPLEMENTAL BILL OF COMPLAINT AND THE ANSWER THERETO

For the purpose of this suit, and for the purpose of the record under the second supplemental bill of complaint and the answer thereto, the court consenting, it is hereby stipulated, admitted and agreed as follows:

1. That defendant is the owner of U. S. patent to Edward Craig, 1,565,909, dated December 15, 1925, upon an application filed August 3, 1925; that said patent issued to defendant as assignee of said Edward Craig; and defendant may offer in evidence an uncertified printed Patent Office copy of said Craig patent, but plaintiffs reserve the right to object to the admissibility of said patent upon any or every ground.

2. That Maxwell Brothers, Inc., an Illinois corporation, manufacturers of wirebound boxes, having a plant located at 2300 South Morgan Street, Chicago, Illinois, and H. R. Gibbons Box Company, an Illinois corporation, manufacturers of wirebound boxes, having a plant located at

4650 Iowa Street, Chicago, Illinoi , hereinafter termed collectively the "Licensees," are now, and within six years next preceding the filing of said second supplemental bill of complaint have been using wirebound box blank machinery in accordance with the drawings which constitute Plaintiffs' Exhibits Nos. 28 and 29; that the defendant made and furnished to said licensees sets of elements or machine parts like those constituting plaintiffs' physical Exhibits Nos. 30 and 31, which are for one side of the machine, and correlative elements for the opposite side of the machine; that said elements were furnished by defendant to be used upon machines previously furnished by the defendant to said licensees; that defendant made said machinery and delivered it to said licensees, is the owner of said machinery, and leases and licenses the use thereof to said licensees; that defendant instructed said licensees how to employ said elements, five on each side of the machine to engage four loose sheets and eight loose cleats in the production of each wirebound box blank, all in accordance with the drawings of said Plaintiffs' Exhibits Nos. 28 and 29; that Plaintiffs' Exhibit No. 32 is a photograph of Plaintiffs' Exhibit No. 30, and Plaintiffs' Exhibit No. 33 is a photograph of Plaintiffs' Exhibit No. 31; that licensees of defendant besides those above named were similarly provided with machinery as [fol. 933] aforesaid for the purposes aforesaid; that defendant intended that the resulting box blanks produced by said licensees upon said machinery were to be used for making wirebound boxes by folding the blanks around box ends and attaching the ends to the folded blanks to complete the boxes; that the aforesaid acts of defendant occurred prior to and within six years next preceding the filing of said second supplemental bill; that defendant expects and intends to continue its said acts; and that said licensees have used said machinery as shown in Plaintiffs' Exhibits Nos. 28, 29, 30, 31, 32 and 33 in the manner and with the materials therein shown, for making wirebound foldable box blanks, and have used, and caused to be used, said wirebound box blanks by folding said blanks around box ends and attaching the ends to the folded blanks to complete the wirebound boxes.

3. The entire record under the original bill and the first supplemental bill in this suit including pleadings, orders

STIPULATED DRAWING OF DEFENDANT'S MACHINE - SHEET I

FIG 1

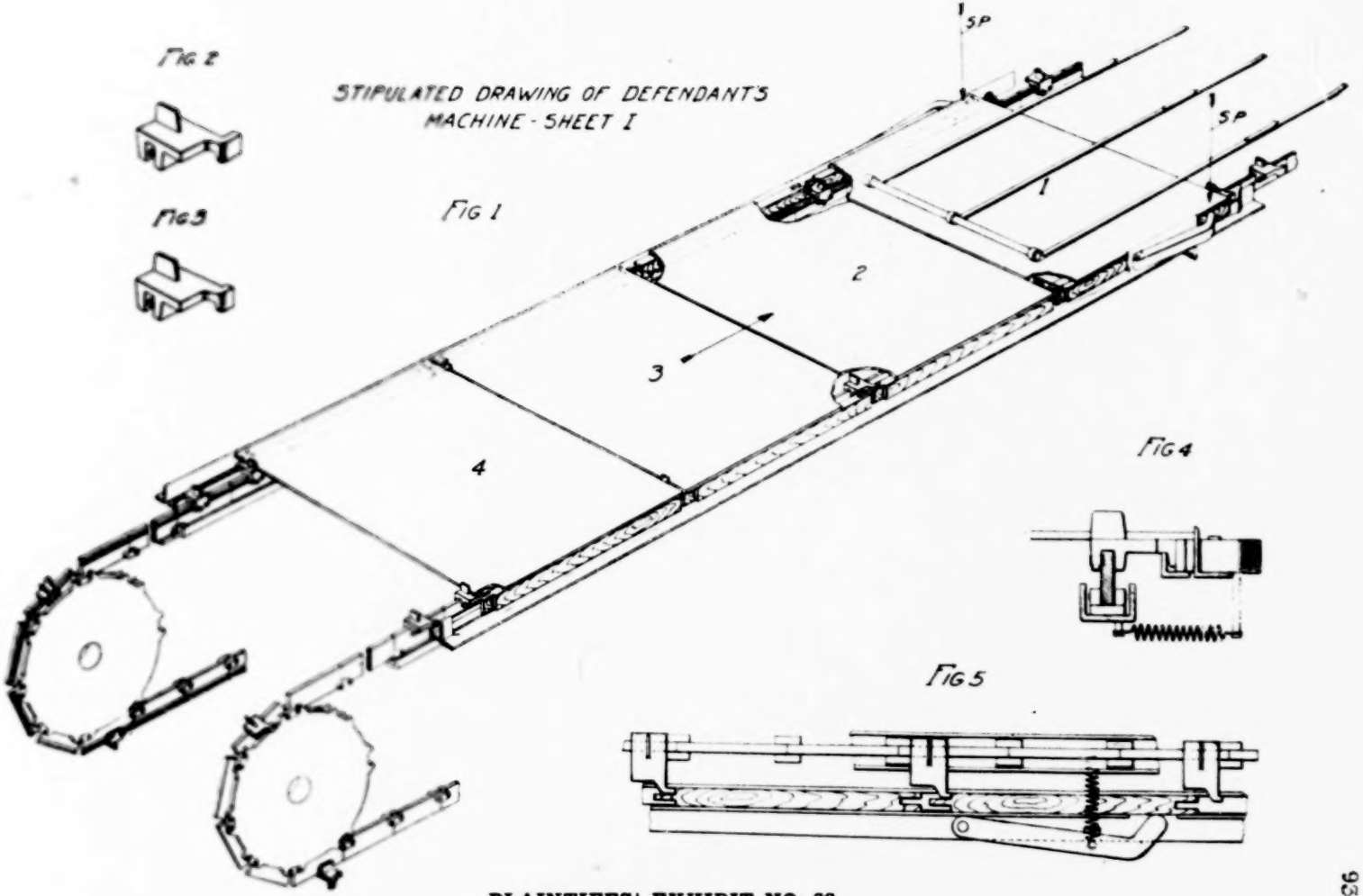


FIG 2

FIG 3

FIG 4

FIG 5

PLAINTIFFS' EXHIBIT NO. 28.

933a

Fig. 1

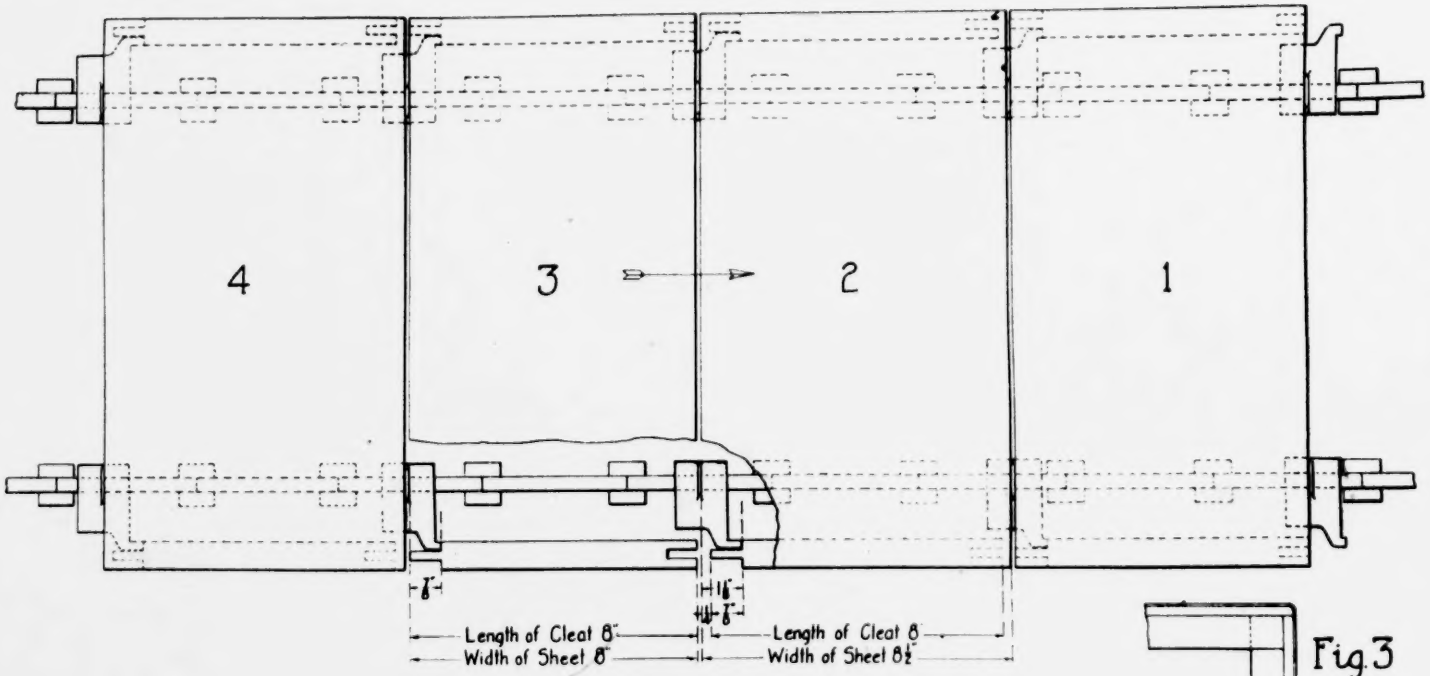


Fig. 3

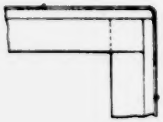
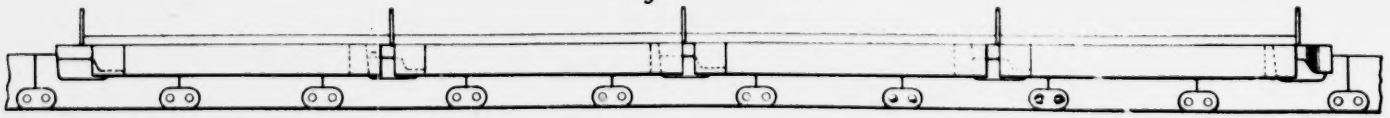


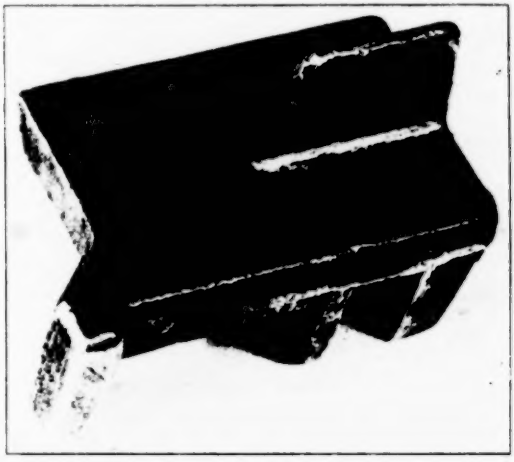
Fig. 2



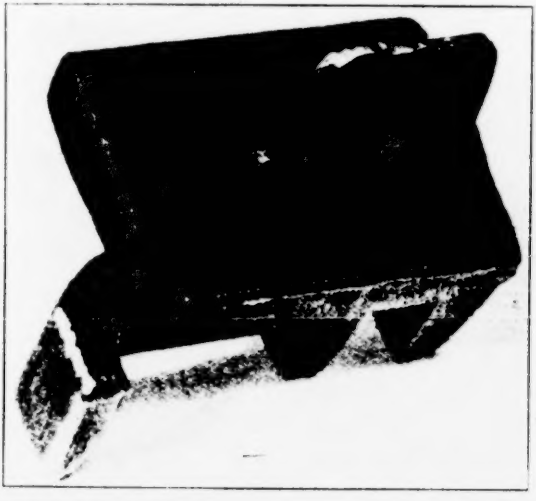
STIPULATED DRAWING OF
DEFENDANT'S MACHINE - SHEET II

PLAINTIFFS' EXHIBIT NO. 29.

933b



PLAINTIFFS' EXHIBIT NO. 32, PHOTOGRAPH OF PLAINTIFFS' EXHIBIT NO. 30.



PLAINTIFFS' EXHIBIT NO. 33, PHOTOGRAPH OF PLAINTIFFS' EXHIBIT NO. 31.

and evidence heretofore introduced or of record shall be considered as part of the record under the second supplemental bill.

Cheever & Cox, Solicitors and Counsel for Defendant. L. A. Janney, of Counsel for Plaintiffs.

June 25, 1926.

(Here follow Plaintiffs' Exhibits Nos. 28, 29, 30, and 31, side folios 933a, 993b, and 933c)

[fol. 934] Deposition of Roscoe Steele, a witness on behalf of plaintiffs, taken before Robert H. Kammler, a notary public in and for State of Illinois and County of Cook, acting as Special Examiner by agreement of counsel

By agreement of parties this deposition is taken under the statute and in accordance with the stipulation (under the original bill) filed May 20, 1925 (ante, p. 44), as to paragraphs 1, 2, 4, 5, 7, 8 and 9 of said stipulation, which paragraphs are hereby, by agreement of counsel, reiterated to govern proceedings under said second supplemental bill.

It is further stipulated and agreed between the parties by their counsel as follows:

1. Depositions of experts on direct examination shall be presented in affidavit form and each expert shall be submitted for cross-examination, if the opposing party shall demand, within the period set for the taking of that branch of the testimony in which such affidavit is offered, but the opposing party shall in any event be accorded five days for examination of the expert's deposition before making the cross-examination.

Roscoe Steele, having been first duly sworn, testified as follows:

Direct examination.

By Mr. Janney:

My name is Roscoe Steele; age 51. I reside at Rockaway, N. J. I am the Roscoe Steele who on or about May

29, 1925, and thereafter testified as a witness in behalf of plaintiffs under the original bill and the first supplemental bill in this case.

In my original testimony in this suit I referred to two methods employed by defendant's licensees for making wirebound boxes, which two methods have been referred to in the record and arguments as the "alternate cleat method" and the "precleating method." The first or alternate cleat method I described as being practiced by assembling upon the box-blank machine only two pairs of cleats (four cleats in all), the pairs of cleats being so located on the blank machine as to pertain to alternate sides of the box, and by assembling also on the blank machine four separate sheets of side material for the respective sides of the box. In this alternate cleat method as I described it, two pairs of cleats were secured to the box ends [fol. 935] which were eventually incorporated with the alternate cleated blanks so that the finished box comprised four pairs of cleats and four side sheets, each side sheet having one pair of cleats. The second or precleating method I described as being practiced by assembling upon the box-blank machine two pairs of loose cleats (for alternate sides of the box) and two loose side sheets corresponding respectively to said pairs of cleats, and also assembling therewith on the blank machine for the other two sides of the box the so-called 'precleated' sections, i. e., side sheets each having its pair of cleats tacked thereto as a preliminary to the introduction of these precleated sections into the blank machine. This résumé of my description of the alternate cleat method and of the precleating method is given at this point for convenient reference and to indicate the general practices of defendant complained of under the original bill and the first supplemental bill.

I have observed the use of licensees of defendant of one other method of making wirebound box blanks, besides the two methods described in my foregoing résumé. Referring to this one additional method, for the present, as "defendant's third method," I observed the practice of defendant's third method at the Maxwell Brothers' plant at Macon, Georgia, and that is the same Maxwell Brothers who have a plant here in Chicago. And that is the same Maxwell Brothers described in the record of this litigation as a

licensee of the defendant Saranac Automatic Machine Corporation. This same Maxwell Brothers, one of defendant's licensees, has two plants, one in Chicago, and the one at Macon, Georgia, at which I saw the practice of defendant's third method. I observed the practice of defendant's third method at the Maxwell Brothers' plant at Macon, Georgia, about the middle of May, 1926; probably about the 19th of May, in their wirebound box plant.

At the time I observed that practice of defendant's third method at the Maxwell Brothers' plant in Macon, I saw at that wirebound box plant, besides the Maxwell Brothers' employees, a representative from the Saranac Automatic Machine Corporation, a mechanic who was there installing their machinery. When I say "their machinery" I mean the Saranac Automatic Machine Corporation's machine that was being installed in the Maxwell Brothers' plant at Macon, Georgia. I was introduced to this man by Mr. Ross Miller, manager of the Maxwell plant at Macon, Georgia, but I do not remember his name. Mr. Miller told me who the man was and what he was there for. Mr. [fol. 936] Miller introduced me to this man as the representative of the Saranac Automatic Machine Corporation, and I talked with the mechanic for several minutes at the Maxwell plant and also met him the next morning at the hotel in which he was stopping while in Macon.

When I saw defendant's third method practiced at the Maxwell Brothers' plant in Macon about the middle of May, the box materials employed for making the wirebound box blanks were eight loose cleats and four loose side sheets. All of those parts were assembled on the blank machine, and when all eight cleats and the four side sheets for a blank had been assembled on the blank machine, not any of the sheets had been pretacked, or previously attached in any manner to their cleats.

To position the eight loose cleats and the four loose side sheets in relation to each other on the blank machine, spacer blocks were placed between the ends of each and every cleat as I observed the practice of defendant's third method at the Maxwell plant in Macon. Then spacer blocks in all were used, arranged in pairs. Counting from the advance end of a blank as it moves through the machine, the first pair of blocks was located in advance of the first pair of

cleats. The second pair of blocks was located at the rear of the first pair of cleats and in advance of the second pair of cleats. The third pair of blocks was located at the rear of the second pair of cleats and in advance of the third pair of cleats. The fourth pair of blocks was located at the rear of the third pair of cleats and ahead of the fourth pair of cleats. The fifth pair of blocks was located at the rear of the fourth pair of cleats. These five pairs of blocks were mounted on an endless chain. There were two endless chains carrying these blocks, one on the right side of the machine and one on the left side of the machine, and five blocks were carried on each of these chains.

I can and do produce drawings showing the arrangement of the blank machine parts and the assembly of the eight loose cleats and four loose side sheets as I observed them at the Maxwell Brothers' plant in Macon about the middle of May, 1926.

By Mr. Janney: The witness produces two large colored drawings marked for identification respectively Plaintiffs' Exhibit No. 34 and Plaintiffs' Exhibit No. 35.

By Mr. Cox: Defendant reserves the right to object to these drawings when they are offered and will object to testimony with reference to them.

(Here follows Plaintiffs' Exhibit No. 34, side folio 936½.)

[fol. 937] These drawings were made under my instructions.

In Plaintiffs' Exhibit 34 the view marked Fig. 1 is perspective of the chain and channels and box parts assembled thereon. Fig. 2 is spacer blocks. Fig. 3 is space blocks. Fig. 4 is a view of the cross-section of the right channel at the rear of the fin of a space block. Fig. 5 is a plan view of a part of the right channel of Fig. 1. In this Plaintiffs' Exhibit 34, those parts shown in yellow and marked with the numerals 1, 2, 3 and 4 represent side sections of sheet material. The parts shown in the brownish color and lines to represent the grain of wood are the cleats. The parts shown in red are space blocks. The parts shown in steel gray are chains. These are two endless chains which pass around sprocket wheels at opposite ends of the machine.

PLAINTIFFS' DRAWING OF DEFENDANT'S MACHINE AT MAXWELL BROTHERS PLANT. MACON GA. - SHEET I

FIG 2

FIG 3

FIG 1

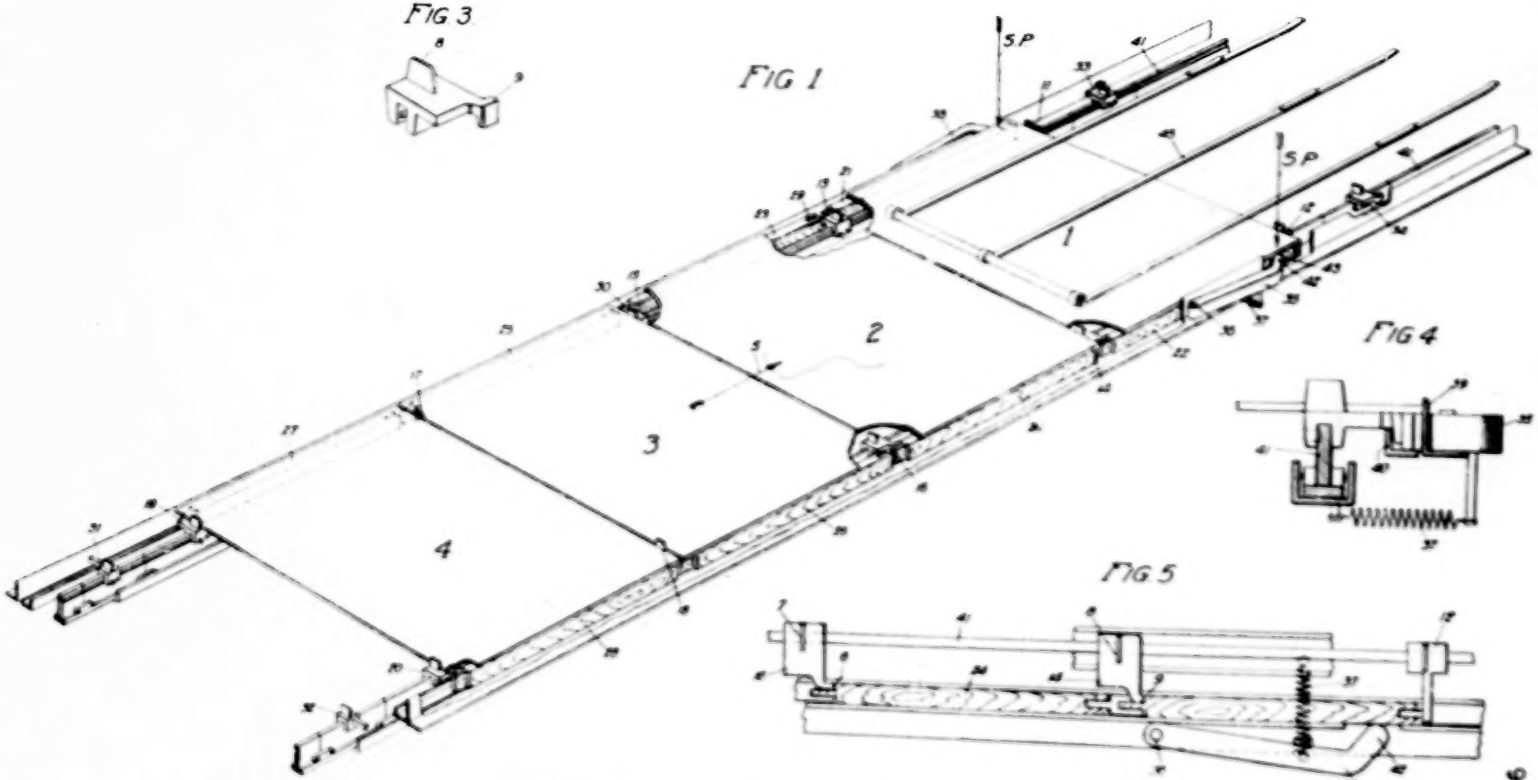


FIG 4

FIG 5

PLAINTIFFS' EXHIBIT NO. 34.

9364

In this Plaintiffs' Exhibit 34 the parts shown in blue are detent or clincher blocks.

Referring to the other drawing Plaintiffs' Exhibit 35, Fig. 1 is plan view of the spacer blocks and the box parts assembled.

Q. 47. I note you have omitted any showing in that figure of the endless chains for the spacer blocks. This is also true of Fig. 2, on Plaintiffs' Exhibit 35. I take it that the omission to show those chains or any other parts was simply for purposes of simplification of the drawing.

A. It was.

By Mr. Cox: This form of question attempting to excuse the witness for having produced drawings which do not clearly show defendant's construction when drawings that have been agreed upon are already the subject of the stipulation entered into in connection with this second supplemental bill of complaint, is objected to both on the ground that it is unfair and misleading and that it is leading to the witness.

By Mr. Janney: The drawings Plaintiffs' Exhibits 34 and 35 are frankly diagrammatic; they do not pretend to show all of the details of the mechanisms in question; they show in the simplest form practicable the rudimentary essentials of the machine and certain parts of the method, according plaintiffs' appraisal of the essentials. The next preceding question was asked to avoid any possibility of a misleading effect and in view of objections made by defendant's counsel in earlier stages of this litigation, similar to the objection just now made. The testimony of this witness has already made clear that the chains illustrated [fol. 938] in Plaintiffs' Exhibit 34 are endless chains traveling around sprockets at opposite ends of the machine, and that the chains have been deliberately omitted from Plaintiff's Exhibit 35 in order to simplify the drawing. Because the endless character of these chains and the sprockets have no relevancy to plaintiffs' case, plaintiff has omitted those details from these drawings, but solely with the idea of facilitating the court's understanding of those features of defendant's practice which plaintiffs consider essential, and without the slightest intention to mislead. In fact, the

wholly frank testimony with reference to the relevant chain details, given in deference to defendant's objections, should wholly exonerate plaintiffs from any charge of attempt to mislead.

By Mr. Cox: The exhibits, especially No. 34, are objected to not only on account of detail but on account of essentials because defendant has in fact the endless chain Rosback machine with additional pushers on the endless feed chains and Exhibit 34 not only omits the showing of the chains and sprockets but is patterned exactly after Fig. 1 of plaintiffs' workholder patent 1,128,144. Defendant's counsel believes that even with the verbal explanation the court is apt to be misled as to what defendant's machine is like by looking at Exhibit 34.

By Mr. Janney: It is noteworthy that defendant's counsel ingeniously admits that Exhibit 34 can be "patterned exactly after Fig. 1 of plaintiffs' workholder patent 1,128,144." This is precisely the fact and it goes to show the close identity in essentials between defendant's machine and plaintiffs' workholder patent.

By Mr. Cox: The objection is made to the patterning of the drawing after plaintiffs' patent and not after defendant's machine.

By Mr. Janney: A comparison (later to be made by this witness) between Plaintiffs' Exhibits 34 and 35, and drawings which, by stipulation, are shown to represent defendant's machine and practices, will show that the drawings Plaintiffs' Exhibits 34 and 35 show all of the essentials of defendant's machine with perfect accuracy, except as to slight but negligible differences between defendant's practices as observed by the witness at one plant and those carried on at another plant.

[fol. 939] In Plaintiffs' Exhibit No. 35, Fig. 2 is side elevation of Fig. 1. Fig. 3 is a diagram showing a box corner which would result in folding a blank as indicated in Fig. 1. In Plaintiffs' Exhibit 35, the parts represented in light yellow are side sections of sheet material. The parts represented in brown are cleats. The parts represented in red are space blocks.

These Exhibits 34 and 35 accurately represent the guideways, the upper runs of the chains, the spacer blocks, and

Fig. 1

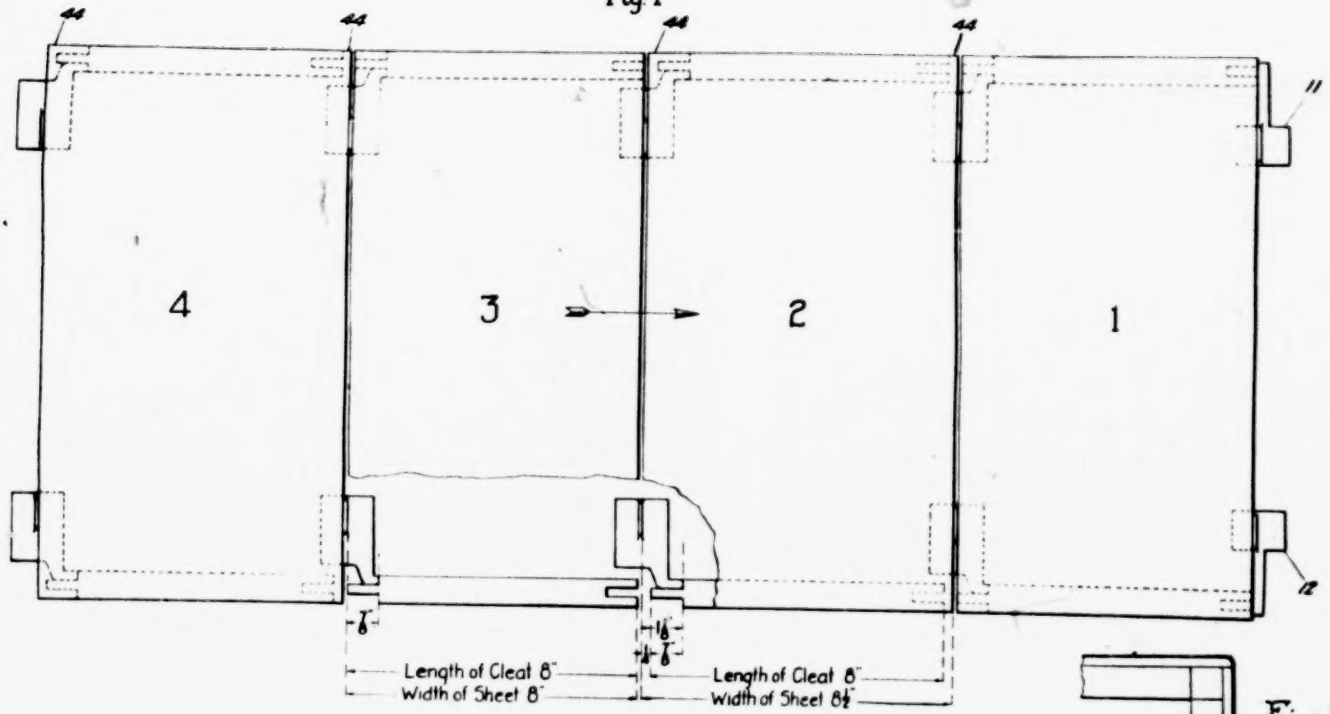


Fig. 3

Fig. 2

PLAINTIFFS' DRAWING OF DEFENDANT'S MACHINE AT MAXWELL BROTHERS PLANT, MACON GA. - SHEET II

PLAINTIFFS' EXHIBIT NO. 35.

3626

other parts illustrated. as . observed them in the practice of defendant's third method at Maxwell Brothers' plant in Macon, Georgia, about the middle of May, 1926, with this exception, that the detent shown in blue was located on the inner side of the channel and in Fig. 1 of Plaintiffs' Exhibit No. 34 it is shown located on the outside of the cleat guideways or channels. I mean that the detent as I actually saw it at Macon was on the inside of the channel instead of being on the outside of the channel as illustrated in Exhibit 34. Stating in general terms and briefly, the difference in function and operation between the inside-mounted detent which I saw in Macon and the outside-mounted detent shown in Plaintiffs' Exhibit 34,—the detent shown in Exhibit 34 in Fig. 1 forces the cleat backward and inward and the detent as I saw it in practice at the Maxwell Brothers' plant in Macon, Georgia, pushes the cleats backward and outward against the outer walls of the cleat guideways. The backward pressing of the cleats by the detent upon the machine as I saw it in Macon, had the effect that it positioned and held the shoulder of the tongue of the cleat against the cleat positioning finger at the rear of that section. The backward pushing function of the detent which I saw at Macon was just the same as the backward pushing function and effect of the blue detent illustrated in Plaintiffs' Exhibit 34.

By Mr. Janney: I offer in evidence the drawings heretofore marked for identification as Plaintiffs' Exhibits Nos. 34 and 35, to be designated by the same titles and numbers.

By Mr. Cox: The drawings Exhibits 34 and 35 are objected to first on the ground that they are insufficiently proved and on this point defendant's counsel has in mind particularly the so-called (but erroneously) spacer block shown for example at the right end in Fig. 5. The drawings are also objected to on the ground set forth at length following question No. 47.

(Here follows Plaintiffs' Exhibit No. 35, side folio 939½.)

[fol. 940] On this drawing Plaintiffs' Exhibit 34, the arrows marked "S. P." is the line of the stapling point. The

parts 1, 2, 3 and 4 are sections of side sheet material. The arrow marked "5" illustrates the direction in which the chains and box parts travel. On the spacer block shown in Fig. 2, this part marked 6 is cleat positioning finger, which engages with the shoulder of the tongue end of the cleat, in the manner represented in Fig. 5, for instance. On this same spacer block of Fig. 2, the part marked 7 is sheet spacing fin. In Fig. 3 on Plaintiffs' Exhibit 34, the part marked 8 is sheet positioning fin. The part marked 9 is cleat positioning finger. That engages the cleat the same as shown in Fig. 5 of Exhibit No. 34.

Witness applies in Fig. 5 the number 9 to indicate the same part which the number 9 indicates in Fig. 3; the numeral 6 to indicate the same part indicated by the numeral 6 in Fig. 2; the numeral 8 to the same part indicated by that numeral in Fig. 3; the numeral 7 to the part indicated by that numeral in Fig. 2.

I can and do produce samples of the spacer blocks illustrated in Figs. 2 and 3 of Plaintiffs' Exhibit 34.

The Examiner notes that the blocks just produced by the witness are Plaintiffs' Exhibits 30 and 31 which were offered in evidence under the stipulation of June 25, 1926, spread upon the record just preceding the testimony of this witness.

[fol. 940½] Plaintiffs' Exhibit No. 32, Photograph of Plaintiffs' Exhibit No. 30, and Plaintiffs' Exhibit No. 33, Photograph of Plaintiffs' Exhibit No. 31, omitted; printed side page 932 ante.

Of these two Exhibits 30 and 31, the blocks themselves, the block Exhibit 30 corresponds to Fig. 3 of the Exhibit No. 34. The block Exhibit 31 corresponds to Fig. 2 of Plaintiffs' Exhibit No. 34. These two blocks shown in Figs. 2 and 3 of Plaintiffs' Exhibit 34 and those of Plaintiffs' Exhibits 30 and 31, are right-hand blocks. I mean they are designed to operate on the right side of the machine as you stand facing the delivery end of the machine, or looking in the direction of travel as indicated by the arrow 5, in Plaintiffs' Exhibit No. 34.

The corresponding left-hand blocks function just the same as those shown in Figs. 2 and 3 of Plaintiffs' Exhibit 34; the difference is that the cleat positioning finger on the right block is at the right of the block and the cleat positioning finger on the left block is at the left side of the block. In a left block corresponding to Fig. 2, the dimensions of the cleat positioning finger 6 and the fin 7 are just [fol. 941] the same as the dimensions indicated in Fig. 2 of Plaintiffs' Exhibit 34; and a left block corresponding to the right block shown in Fig. 3, is of the same dimensions as the block shown in Fig. 3.

Q. 80. In Plaintiffs' Exhibits 30 and 31 (the blocks themselves) and also as illustrated in Figs. 2 and 3 of Plaintiffs' Exhibit No. 34, I notice that the cleat positioning finger on one block seems to be longer than the cleat positioning finger on the other block. For instance, the cleat positioning finger 6 of Fig. 2 of Plaintiffs' Exhibit No. 34, is shown as longer than the cleat positioning finger 9 of Fig. 3. Why is one longer than the other?

A. The cleat positioning finger as shown in Fig. 2 at 6 is of a greater distance from the sheet positiong fin- at 7 to predetermine the cleat end and the sheet edges so as to allow a projection of the side sheet over the cleat ends to form an overlap, so that one section will overlap the sheet edge of the next section.

The form of overlap which I have just referred to is indicated in Plaintiffs' Exhibit 34, Fig. 1, and Plaintiffs' Exhibit 35, Fig. 1. Also Fig. 3 [ante, p. 939]. This Fig. 3 of Plaintiffs' Exhibit 35 illustrates that when the box is folded the one sheet edge overlaps the edge of the next sheet.

Referring to the block Plaintiffs' Exhibit 30, illustrated in Fig. 3 of Plaintiffs' Exhibit 34: The liner distance between the edge of a sheet positioned against the sheet positioning fin- 8 and the shoulder of a cleat positioned against the cleat positioning finger 9 would be 7/8 inch. The tongue of the cleat measuring from the extreme end of the tongue to the shoulder engaged by the positioning finger 9 of the block shown in Fig. 3 of Plaintiffs' Exhibit No. 34, is also seven-eighths of an inch. The extreme end of the cleat tongue and the edge of the sheet, when

they are positioned by the block shown in Fig. 3 of Plaintiffs' Exhibit 34, would be flush.

Referring to Plaintiffs' Exhibit 34, the sections 1 and 3 have these cleat blocks of Fig. 3 at their rear extremities. According to this third method, and practice of defendant, the rear ends of the cleats and the rear edges of the sheets in sections 1 and 3 would be flush. In these sections 1 and 3, as I observed the practice of defendant's third method, the length of the cleats was the exact width of the sheets. In sections 1 and 3 the advance end of each cleat and the advance edge of its sheet were flush.

Referring to the block Plaintiffs' Exhibit No. 31 illustrated in Fig. 2 of Plaintiffs' Exhibit 34: The linear distance between the edge of a sheet positioned against the [fol. 942] fin- 7 and the shoulder of a cleat positioned against the finger 6 is $1\frac{1}{8}$ inches. That is one-fourth inch greater than the corresponding distance in the block of Fig. 3. The length of the tongue of the cleat, measured from the extreme rear end of the tongue to the shoulder where it is positioned against the finger 6, would be seven-eighths of an inch. With these dimensions and this arrangement, the relationship between a sheet edge and the extreme end of the cleat tongue when both were positioned by the block shown in Fig. 2 of Plaintiffs' Exhibit No. 34, would be the sheet edge would project beyond the end of the cleat one-fourth inch. The sections 2 and 4 shown in Plaintiffs' Exhibit No. 34 have their rear edges positioned in this manner, with the rear margin of a sheet projecting one-fourth inch beyond the ends of its cleats. In sections 2 and 4, as I observed defendant's third method, the width of the sheets Nos. 2 and 4 is one-half inch wider than the length of the cleat in those sections. And when this relatively short cleat and its relatively wide sheet are positioned at their rear extremities against the block shown in Fig. 2 of Plaintiffs' Exhibit No. 34, leaving the one-fourth inch projecting margin of sheet which I have described, the sheets project on the advanced edge of sections 2 and 4 one-fourth inch beyond the end of each cleat.

Summarizing my testimony: The cleat ends and sheet edges are flush in sections 1 and 3, while in sections 2 and 4 each sheet edge, at both front and rear, projects one-fourth inch beyond each cleat end. The purpose and effect

of this arrangement when the sections shown in Plaintiffs' Exhibit No. 34 have been wired together and are folded into box form, is the edges of the sheets of sections 2 and 4 overlap the edges of the sheets of sections 1 and 3. That character of overlap to which I am referring is explicitly illustrated, after the folding of the blank, in Fig. 3 of Plaintiffs' Exhibit No. 35.

Referring to Plaintiffs' Exhibit No. 35, Figs. 1 and 2 thereof illustrate the flush arrangement of sheet edges and cleat ends of sections 1 and 3, and with the overlap margin arrangements of sections 2 and 4.

As to the dimensions shown upon Plaintiffs' Exhibit No. 35: The figure seven-eights inch represents the length of the tongue of the cleat; the one and one-eighth inch represents the length of the tongue of the cleat plus the overlap margin of the sheet; and the one-fourth inch represents the overlap margin of the sheet. These dimensions recorded upon this drawing Plaintiffs' Exhibit No. 35 are identically the same as the dimensions of corresponding [fol. 943] things which I myself observed in the practice of defendant's third method at the Maxwell Brothers' plant at Macon, Georgia, about the middle of May, 1926.

Just under section 2 in Fig. 1 of Plaintiffs' Exhibit 35 are the legends: "Length of cleats 8" " and "Width of sheet 8½"," indicating that the cleat was one-half inch shorter than the width of the sheet. That difference of one-half inch was the same as the relationship of cleat length and sheet width for section 2 as I observed them in the practice of defendant's third method at the time and place I have named. The difference of cleat length and sheet width for section 4 as I observed it in the practice of defendant's third method, was identically the same as section 2. According to my observation of the practice of defendant's third process, at the time and place I have stated, the side sheets 1, 2, 3 and 4 were spaced apart with the positioning fins 7 and 8 shown in Figs. 2 and 3 of Plaintiffs' Exhibits 34 and 35 between them. The thickness of the fins 7 and 8 between one sheet edge and the next was 3/32 of an inch, and they spaced the side sheets from each other, 3/32 of an inch. The thickness of the side sheets 1, 2, 3 and 4 which I observed in use in the

practice of defendant's third method at the time and place I have named, was 1/4 inch.

The distance between the adjacent sheet edges as spaced by the fins 7 and 8 being 3 32 of an inch and the thickness of the sheets being 1/4 inch, the sheet thickness was two and two-thirds times the space between one sheet edge and the next. So far as I have ever known, the least thickness of side sheet ever used for making wirebound box blanks on defendant's machine is 3 16 inch. This least thickness of side sheets used upon defendant's machine is twice the thickness of the sheet positioning fins 7 and 8 of the blocks shown in Figs. 2 and 3 of Plaintiffs' Exhibit No. 34.

These spacer blocks shown in Figs. 2 and 3 of Plaintiffs' Exhibit No. 34, and as illustrated in the blocks themselves, Plaintiffs' Exhibits Nos. 30 and 31, are designed for dealing with a particular thickness of sheet material. They are designed to take care of the assembly of cleats whose width is 7/8 inch and sheets a thickness of 1/4 inch. I know they are designed for handling 7/8 inch wide cleats and 1/4 inch sheets because on the cleats whose width is 7/8 inch, the tongue from the extreme end to the shoulder must be cut 7/8 inch and the linear distance from the face of the cleat positioning finger to the fin on a block as shown in Fig. 3, Plaintiffs' Exhibit 34, is 7/8 inch, and also the linear distance from the face of the cleat positioning fin- [fol. 944] ger to the fin as shown in the block in Fig. 2 is 7/8 inch, or the exact length of the tongue, plus 1/4 inch, which is the thickness of the side sheet, or a total of 1 1/8 inches. So that when folding this blank the edges of one sheet will overlap the edges of the next sheet. The fact that these blocks provide for that 1/4 inch wide overlap margin of the sheet projecting beyond the cleat end, means that that margin is indented to overlap the edge of a sheet which is 1/4 inch thick, just as illustrated in Fig. 3 of Plaintiffs' Exhibit No. 35.

When the box materials are assembled as shown in Plaintiffs' Exhibits 34 and 35, using 1/4 inch thick side sheets and having the side sheets spaced apart 3 32 inch by the sheet positioning fin, the effect of this arrangement, when the box parts have been wired together and are folded into box form, is that the wires are properly tensioned over each corner. Such tensioning is indicated in

Fig 3 of Plaintiffs' Exhibit No. 35. With the exact arrangements of parts shown in Figs. 1 and 2 of Plaintiffs' Exhibit No. 35, and in Fig. 1 of Plaintiffs' Exhibit No. 34, the tensioning of the wires I have referred to would occur when the box parts have been wired together and the resulting blank folded into box form, over three corners of the box. The wire is tensioned over the fourth corner of the box by the use of the closing tool, which twists together the two loose ends of the binding wire on the fourth corner and the proper tension is the result. In the practice of defendant's third method as I observed it at the time and place I have named, the actual assembly and dimensions of the box parts were such as to produce the tensioning I have described when the box parts were wired together and folded into box form. Referring now to Fig. 1 of Plaintiffs' Exhibit 34, the blocks marked 11 and 12 have a sheet positioning fin and a cleat positioning finger that extends outward into the cleat channels. The construction of these blocks is more clearly shown on Fig. 1 of Plaintiffs' Exhibit 35; also on Fig. 5 of Plaintiffs' Exhibit No. 34, at 12. These blocks are different in construction from the blocks at the rear of each blank section in the respect that the cleat positioning finger is of a different design. The forward ends of the cleats of section 1 contacted with the cleat engaging fingers of blocks 11 and 12 as I observed the operation of defendant's machine in Macon, Georgia, and as illustrated in the drawings I have referred to. The purpose of the cleat engaging fingers on these blocks 11 and 12 is to hold the shoulder of the tongue at the rear of the cleat against the face of the cleat positioning finger at the rear of the section.
[fol. 945] The construction of the blocks marked 13 and 14 is a spacer block that has a sheet positioning fin and also a cleat positioning finger extending into the cleat guideway. Block 14 is identical with the block as shown in Fig. 3 of Plaintiff's Exhibit No. 34.

Describing the construction of blocks 15 and 16: Block 16 is identical in construction as the block shown in Fig. 2 of Plaintiffs' Exhibit No. 34; block 15 functions the same as block 16 only as the left block on the opposite chain, and at the rear of section 2. Block 15 corresponds

with block 16 in dimensions identically the same, only the left block.

These two blocks 15 and 16 are just the same as blocks 13 and 14, except that on blocks 15 and 16 the finger that engages the shoulder of the cleat is a greater distance in advance of the sheet spacing fin, for the purpose of providing marginal projection of the side sheet. As to the fourth pair of blocks 17 and 18 at the rear of the third section: Block 17 is identical with block 13; and block 18 is identical with block 14.

Describing the construction of the fifth pair of blocks 19 and 20: Block 19 is identical with block 15 and block 20 is identical with block 15 [16] and also with the block shown in Fig. 2 of Plaintiffs' Exhibit No. 34.

[fol. 945½] Plaintiffs' Exhibit No. 34 omitted; printed side page 937 ante.

The part marked 21 is the left cleat of the first section. The part marked 22 is the right cleat of the first section. The parts marked 23 and 24 are the cleats of the second section. The part marked in dotted lines at 25 is the left cleat of the third section. The part marked 26 is the right cleat of the third section. The part shown in dotted lines at 27 is the left cleat of the fourth section. The part marked 28 is the right cleat of the fourth section. The form of the ends on all these cleats is known as the tongue and groove type of cleat.

As I observed the operation which I have described, and as illustrated in these drawings Plaintiffs' Exhibits Nos. 34 and 35, as to the manner in which the cleats are assembled for the successive blank sections, the groove end of the cleats lead under the stapling point. In other words, the cleats are uniformly placed with the groove ends foremost looking in the direction of travel of the chain.

On cleat 23, the part marked 29 is groove end of cleat. The part marked 30 is tongue end of cleat. The blocks marked 31 and 32 are the advance blocks of the first section of the next oncoming blank to be assembled after the one just described. The blocks 31 and 32 are identical with the blocks 11 and 12. The blocks marked 33 and 34 [fol. 946] are the blocks of the rear or fourth section of the blank assembled just prior to the one described in Fig. 1, Plaintiffs' Exhibit No. 34.

The part marked 35 in Figs. 1 and 5 of Plaintiffs' Exhibit No. 34 has been termed as a "detent" on the right of the right guideway. The part marked 36 on the figures just referred to is the pivoting point of said detent. The part marked 37 is a spring with one end fast to the frame of the machine and the other end fastened to a lug on the detent. 38 in Fig. 1 of Plaintiffs' Exhibit 34 is detent on the outside of the left channel opposite 35. In Fig. 4, Plaintiffs' Exhibit 34, the part marked 39 is the outer wall of the cleat guideway; that guideway is stationary. The part marked 40 is the inner wall of the cleat guideway. 41 in Figs. 1, 4 and 5 of Plaintiffs' Exhibit 34 are the endless chains. The blocks of Figs. 2 and 3 of Plaintiffs' Exhibit 34 and the corresponding blocks on the left side of the machine are mounted on the endless chains 41, with set screws. They can be removed from the chain and adjusted on the chain by loosening the set screws and lifting them off the chain and they can be adjusted fore and aft on the chain by loosening the set screws. The occasion for adjusting the blocks on the chains with reference to the distance between them, is in using different length cleats and different width side sheets which occur in making different sized boxes.

[fol. 946½] Plaintiffs' Exhibit No. 35 omitted; printed side page 939 ante.

I have referred to certain dimensions of box parts as shown in Fig. 1 of Plaintiffs' Exhibit No. 35. The inside dimensions of a box made from this blank would be 8 inches in width and 8 inches in depth.

It is standard practice to have the sheet edges on the top or cover of the box overlap the sheets of the front and rear sides of the box. In that case, section 4 in Figs. 1 of Plaintiffs' Exhibits 34 and 35 would be used as the cover of the box.

The distance, in the blank shown in these drawings, between the rear ends of the cleats of section 1 and the advance ends of the cleats of section 2, is one fourth of an inch plus 3 32 of an inch, the last dimensions being the thickness of the sheet positioning fin. This cleat spacing is just the same as the spacing between the rear ends of the cleats on section 2 and the advance ends of the cleats on section 3. The distance between the rear ends

of the cleats on section 3 and the advance ends of the cleats of section 4 is identical with the other two.

In the operation of defendant's machine as I observed it at Macon, Georgia, and in the production of a blank from materials as shown in Plaintiffs' Exhibits 34 and 35, [fol. 947] one size staple only was used in attaching the binding wires that overlie the cleats. The approximate length of those staples was one inch. The two strands of binding wires that overlie the cleats are applied at the stapling point as indicated by the arrows "S. P." in Fig. 1 of Plaintiff's Exhibit 34.

I have stated that the distance between cleat ends of successive cleats according to the dimensions given in Plaintiffs' Exhibit 35 is 1 4 of an inch plus 3 32 of an inch or 11 32 of an inch. This uniform distance between cleat ends is maintained during the time the binding wire is applied and in the finished blank.

Referring again to the detent 35, the part marked 42 is the curved end of the detent. That curved end is normally maintained, through the action of the spring 37, in the path of the cleats. 43 is an opening in the outer side wall of the cleat guideway to allow the curved end of the detent to pass in the path of the cleat. The function of the detent 35 and the corresponding detent 38 is to position and hold the shoulder of the tongue end of the cleat against the cleat positioning finger of the space block at the rear of that section just prior to and at the time the first staple in the section is driven. I have reference to the first staple driven in each cleat, which staple straddles the binding wire and passes through the sheet material into the cleat. The detent 35 does not serve any function other than the one I have just described. This action of the detent 35 is repeated as each oncoming cleat contacts with the curved end 42.

The advance blocks 11 and 12 have to do with the maintenance of the relative positions between cleats and sheets as I have described. The parts of the space blocks 11 and 12 that project into the pathways of the cleats hold the shoulder of the cleat at the rear of the first section against the face of the cleat positioning fingers of the blocks at the rear of the first section and also hold the cleats of the first

section in relative position to the sheets of the first section and of the other sections.

The function performed by the fins on the blocks 11 and 12 is to hold the rear edge of the sheet of the first section against the fins at the rear edge of the first section.

Considering the blank assembly as shown in Fig. 1 of Plaintiffs' Exhibit No. 34 and the corresponding plan view in Fig. 1 of Plaintiffs' Exhibit 35, in which certain sheet dimensions are given and relative positions shown as I have described, these relative positions of box parts would [fol. 948] be exactly the same and the resulting blank would be identical with the blank of these drawings if the blocks were formed with a cleat engaging finger extending between the tongue and groove portions of adjacent cleat ends instead of having fingers engaging the cleat shoulders as shown, if that finger that protruded between the cleats was equal in width to the distance between the cleat ends.

Referring to the assembly of box parts shown in Fig. 1 of Plaintiffs' Exhibit 34 and Fig. 1 of Plaintiffs' Exhibit 35, using blocks like the blocks 11 and 12 at the advance ends of the cleats for the first section and using blocks as described in my next preceding answer each having a cleat engaging finger protruding between the ends of the cleats, this finger being of a thickness equal to the distance between the cleat ends as described in my last answer,—you would not need the detent 35 in producing a blank by this arrangement on defendant's machine.

Considering this same arrangement in producing a blank upon defendant's machine as shown in Fig. 1 of Plaintiffs' Exhibit 34, and as observed by me at Macon, Georgia, equipped with the detent 35, it would not be necessary for the finger extending between adjacent cleat ends to be as wide as the distance between those ends, because the detents would position the tongue ends of the cleats against the front face of the finger of the space block that protruded into the guideways at the time the staples are driven.

The finished blanks produced by the machine described in the next two preceding paragraphs would be identical with the finished blank produced by the machine shown in Plaintiffs' Exhibit 34 and the machine observed by me at Macon, Georgia.

The detent 35 is used to position and hold the cleats with the shoulder of the tongue end of the cleat against the

front face of the cleat positioning finger on the blocks at the rear of the section, prior to and at the time the first staple is driven into each section.

The chains 41 are fed forward by pawl and ratchet and what is known as an intermittent feed. By this intermittent feed the blank is stationary at the time of each staple driving operation and is successively moved forward between staple driving operations. This intermittent movement of the chains 41 has something to do with the employment of the detent 35. These chains feeding forward by the step-by-step motion causes the cleats to overtravel or move [fol. 949] themselves in advance of the cleat positioning fingers on the space blocks. The detents are placed on this machine for an assurance that at the time the first staple is being driven in each section that the cleat be held against the cleat positioning fingers at the rear of said section.

In defendant's third method as illustrated in Plaintiffs' Exhibit 34 and as observed by me, the cleat engaging fingers on the advance blocks 11 and 12 are necessary, because in actual practice the cleats of the first section by the step-by-step motion of the chain would be in some instances thrown so far in advance of the cleat positioning fingers on the blocks at the rear of this section that the extreme end of the tongue of the cleat would engage the face of the cleat positioning finger and hold the groove end of the cleat in advance of the front edge of the side sheet $\frac{7}{8}$ of an inch. This would make a cull blank.

My expression "step-by-step" motion has reference to the intermittent travel of the chain above described.

This result of the production of a defective blank could not occur in the machine and blank set-ups illustrated on any cleats except the cleats of section 1, with the other blocks as shown, because the distance between the extreme groove end of the cleat and the rear of the cleat positioning finger on the space block would not allow the cleat to be thrown forward by the intermittent step motion of the machine the length of the tongue of the cleat; therefore, the extreme end of the tongue end of the cleat could not engage the face of the cleat positioning finger on the space block. In other words, referring to Fig. 5 of Plaintiffs' Exhibit 34, the distance between the grooved end of cleat 24, and

the rear of the finger 9, is less than the length of the tongue at the opposite end of cleat 24.

Referring to Figs. 1 and 5 of Plaintiffs' Exhibit 34, if either of the blocks shown in Figs. 2 and 3 of Plaintiffs' Exhibit 34 were substituted for the block 12 at the advance end of the right-hand cleat of the first section and a corresponding substitution were made at the left-hand side, this would accomplish the result of preventing the cleats of the first section moving too far ahead with respect to the blocks at the rear of the first section, as I have described, because the rear faces of the cleat positioning fingers as shown in the blocks of Fig. 2 or Fig. 3 of Plaintiffs' Exhibit 34 would not allow the cleats of the first section to be thrown forward by the step-by-step motion of the chain a sufficient distance so that the extreme ends of the tongues could [fol. 950] engage the faces of the cleat engaging fingers on the blocks at the rear of the first section.

Q. 199. What determines the predimensioning of the cleats before they are placed in the machine as part of a blank assembly?

A. The length of the cleats is determined by the inside dimension of the box to be formed from the blank made.

This is likewise true of the side sheet, with the exception that the width of the side sheets must be determined by the style of overlap desired, so that when the box is folded the edge of one section of sheet material will overlap the adjacent edge of sheet material and also the tensioning of binding wire must result.

Q. 201. What connection, if any, is there between this predimensioning of cleats and sheets and the adjustment of the spacer block for a blank assembly?

A. The spacer blocks must be assorted and assembled on the chains in a position to properly space the cleat ends in relation to the sheet edges and according to the overlap in which the side sheets have been cut. By "assorted" I refer to the selection of one of the two blocks shown in Figs. 2 and 3, and also the blocks shown at the advance edge of the first section in Plaintiffs' Exhibit 34, Fig. 1. The selection of either of these blocks determines the character of overlap and which side sheets are to overlap adjacent side sheets.

I have described the dimensioning of side sheet material to produce the intended overlap. Referring to Plaintiffs' Exhibit 35, the points marked 44 are what is known as the overlap margin of the side sheet.

The blocks shown in Figs. 2 and 3 of Plaintiffs' Exhibit 34 and the actual blocks Plaintiffs' Exhibits 30 and 31, can be used to provide a different character of overlap, say an overlap of the sheets of sections 1 and 3 over the sheets of sections 2 and 4, by substituting for block 14 the block shown in Fig. 2 of Plaintiffs' Exhibit 34 and substituting for block 13, the left block to correspond with block shown in Fig. 2 of Plaintiffs' Exhibit 34, and by substituting for blocks 15 and 16, blocks 13 and 14, and substituting for blocks 17 and 18, blocks 15 and 16, and substituting for blocks 19 and 20, blocks 17 and 18; it would also be necessary to have the side sheets of the first section and of the third section to be in width one-half inch wider than the length of the cleats of those sections, and to have the side sheets of the second and fourth section cut to the exact width of the length of the cleats for those sections.

[fol. 951] Q. 206. In making this substitution would the substituted blocks be placed at the same points on the chains as the blocks removed, or would a different adjustment of blocks be necessary?

A. It would be necessary for an adjustment of the spacer blocks; they would have to be adjusted on the chains to suit the different widths of side sheet material.

It would not be necessary to place advance blocks 11 and 12 at different points on the chain in making this substituted set up, if blocks 13 and 14 were adjusted to suit the first section.

I have stated that in making this rearrangement the side sheet of section 1 would be one-half inch wider than the side sheet shown in the drawings; therefore it would be necessary to either advance blocks 11 and 12 one-half inch or move the substituted blocks 15 and 16 back one-half inch from the point at which blocks 13 and 14 are located.

This machine of defendant's third method as shown in Plaintiffs' Exhibit 34, and as observed by me in Macon, can be used to produce blanks which when folded into box form result in what is known as the "follow-up" overlap (in

which one edge of each sheet is overlapped by margin of an adjacent sheet and the other edge of the sheet overlaps the other adjacent sheet edge) by using blocks as shown in Fig. 3 of Plaintiffs' Exhibit 34 at the rear of each and every cleat on the right chain and the corresponding blocks on the left chain, or by using blocks as shown in Fig. 2 of Plaintiffs' Exhibit 34 on the right chain and the corresponding blocks on the left chain.

In using blocks as shown in Fig. 2 entirely, the side sheet projection would occur at the rear edge of each section looking in the direction of travel of the blank. In using blocks like Fig. 3 entirely, the marginal projection would occur at the front edge of each blank section. In making a "follow-up" overlap and using one-fourth inch thick side sheets, the side sheet of each section is one-fourth inch wider than the length of the cleats of that section.

I have testified that in producing the blank on a machine of Plaintiffs' Exhibit 34, and on the machine of defendant as I observed it in Macon, that in the assembly of the box parts definite spaces are provided between adjacent cleat ends and that these distances are maintained while the blank is traveling through the machine and the binding wire is applied. In the production of a blank having an overlap of the sheet of sections 1 and 3 over the edges of sheets 2 and 4, as I have described, and in the assembly and manu- [fol. 952] facture of blanks having the "follow-up" overlap as I have described, this definite spacing between adjacent cleat ends is similarly provided for and maintained.

Q. 214. I show you drawings marked Plaintiffs' Exhibits 28 and 29, which form part of a stipulation entered into between counsel for the parties on June 25, 1926, and which is copied into the record above, and ask you to compare these drawings with Plaintiffs' Exhibit Nos. 34 and 35, which latter drawings you have used exclusively in your preceding testimony, and point out all the differences between them.

A. In Exhibit No. 28 spacer blocks mounted on the chain Fig. 1, the leading blocks in front of section 1 differ from the leading blocks in front of section 1 in Fig. 1 of Plaintiffs' Exhibit 34; also the blocks mounted on the chain Fig. 1, Plaintiffs' Exhibit 28, that correspond to the blocks in advance of section 1, Fig. 1, Plaintiffs' Exhibit 28, which

are the first blocks of the oncoming blank differ from corresponding blocks in Fig. 1, Plaintiffs' Exhibit 34, marked 31 and 32.

In Fig. 5 in Plaintiffs' Exhibit 28, the block at the extreme right of this figure differs from the corresponding block in Fig. 5 in Plaintiffs' Exhibit 34 and marked 12. Otherwise I see no difference in these drawings other than Exhibit No. 28 is more complete by showing the sprocket wheels at the front end of the machine and a portion of the endless chain thereon; also in Fig. 5 I note the drawing is more complete than that of Fig. 5 of Plaintiffs' Exhibit No. 34 because the links of the chains are shown. I note the difference between Exhibit 29 and Exhibit 35 in Fig. 1 that the advance blocks or the blocks at the extreme right of Fig. 1, Exhibit 29, differ from the corresponding block in Fig. 1 of Plaintiffs' Exhibit 35. Also the advance block or the block at the extreme right in Fig. 2, Plaintiffs' Exhibit 29, differs from the block at the extreme right of Fig. 2, Plaintiffs' Exhibit 35. I note that Fig. 1 and Fig. 2 of Plaintiffs' Exhibit 29 is more complete than Fig. 1 and Fig. 2 of Plaintiffs' Exhibit 35 as the portions of the endless chains are shown and the blocks mounted thereon. Otherwise I see no difference.

The right-hand block at the advance edge of section 1 of both figures 1 of Plaintiffs' Exhibits 28 and 29, and the block shown in Fig. 3 of Plaintiffs' Exhibits 28 and 34 are identical.

I have previously testified that the chains shown in Plaintiffs' Exhibit 34 were endless; therefore the illustra [fol. 953] tion of the chains around the sprockets in Fig. 1 of Plaintiffs' Exhibit 28 and the chains in Plaintiffs' Exhibit 29 more clearly shows this omission from Plaintiffs' Exhibits 34 and 35. Then so far as any actual difference between machine parts exists, it is merely that in Plaintiffs' Exhibits 28 and 29, a block like that shown in Fig. 3 of Plaintiffs' Exhibit 28 is substituted at the advance end of the first section for the block of the type shown at 12 in Plaintiffs' Exhibits 34 and 35, and a similar substitution is made on the left chain. Except for this difference in the one pair of blocks located at the advance extremity of the blanks, the machine illustrated in Plaintiffs' Exhibits 28 and 29 is just the same as the machine which I saw at Max-

well Brothers' plant in Macon at the time I have referred to, and which I have described in my testimony by reference to Plaintiffs' Exhibits 34 and 35. Besides disregarding the initial pair of blocks, I am also disregarding the difference in the blue detent, a difference which I have already sufficiently dealt with.

[fol. 953a] Plaintiffs' Exhibit No. 34 omitted; printed side page 937 ante.

[fol. 953b] Plaintiffs' Exhibit No. 28 omitted; printed side page 932 ante.

[fol. 954a] Plaintiffs' Exhibit No. 29 omitted; printed side page 932 ante.

[fol. 954b] Plaintiffs' Exhibit No. 35 omitted; printed side page 939 ante.

The function and operation of the machine and the several parts thereof shown in Plaintiffs' Exhibits 28 and 29, are just the same as the function and operation of the machine and the parts thereof which I observed at the Maxwell Brothers' plant at Macon, at the time I have stated, and as I have described that function and operation in my earlier testimony.

The blank produced upon the machine shown in Plaintiffs' Exhibits 28 and 29 and the blank produced upon the machine shown in Plaintiffs' Exhibits 34 and 35 would be identical.

As I have observed the operation of defendant's third method in the Maxwell Brothers' plant at the time and place I have named, after the box parts had been assembled upon the blank machine as shown in Plaintiffs' Exhibits 34 and 35, the blank was moved forward by an intermittent step and the staples were driven over the binding wire, through the side sheets and into the cleats. And this was done along the length of the blanks; staples were all driven at one point on the machine as the blank moved intermittently under the stitcher head. And after a wiring operation was completed in defendant's third method, as I observed it, the wire would extend along the full length

of the four sections and the ends of the binding wire would protrude beyond both ends of the blank approximately 3 inches. And when the wiring operation had been completed, on the blank I saw in operation, there were four binding wires the full length of the blank, one binding wire [fol. 954] overlying the cleats on each end of the box, the intermediate binding wires evenly spaced between the wires that overlay the cleats. After the wired blank which I have described had been delivered by the machine, it was placed on the table and tied in bundles ready for shipment.

That character of blank must be folded into box form so that the adjacent ends of the cleats mesh, and the edge of the sheet in one section overlap the edge of the sheet in the second section, and by this folding the wires will be properly tensioned. With reference to end pieces in constructing a box of these blanks which I saw in process of manufacture at the Maxwell Brothers plant at Macon, as I have described, sections 1 and 3 as shown in Fig. 1 of Plaintiffs' Exhibit 34 must be folded at right angles to section 2 so that the cleats mesh and the ends must be stapled or nailed to the inside of the cleats in section 1 and section 3. When this has been done, No. 4 section in Plaintiffs' Exhibit 34 is held in relative position to section 3 by the binding wires and can be closed by folding section 4 over the top or open section of the box. More clearly described, section 4 in relation to the other three sections would resemble the lid of a trunk when the trunk is open and the binding wires acting or substituting for the hinges. When this section 4, serving as a lid to the box, is closed down, to complete the closure of the box, section 4 is then permanently secured in place to hold the box closed, according to defendant's practice, by twisting together the binding wires that protrude beyond the first and fourth sections, after the tongues at the rear end of the fourth section are meshed with the grooved ends of the cleats of the first section, twisting these loose ends of wire to a point where tension is a result.

I have described a process or method of making the box blank and then making the box therefrom by reference to the machine illustrated in Plaintiffs' Exhibits 34 and 35. That method of making the blank and the box would

be identically the same as the method of making the blank and the box in the use of the machine shown in Plaintiffs' Exhibits 28 and 29.

The box-blank illustrated in Plaintiffs' Exhibits 28 and 29, when wired and then folded, would have the binding wires tensioned over the box corners. The box-blank illustrated in Plaintiffs' Exhibits 28 and 29 would have the side sections positioned close enough together so that when wired and folded the wire tends to cut into the corners of the box. The box-blank illustrated in Plaintiffs' Exhibits [fol. 955] 28 and 29, when wired and folded, would produce a box having in each corner one side sheet margin overlapping the edge of an adjacent side sheet, thereby forming a tight lap-cornered box.

Q. 234. Besides such blanks as you saw on the occasion already described at the Maxwell Brothers' plant in Macon, have you seen any other blank made by defendant's licensees which bore evidence of their having been made from eight loose cleats and four loose side sheets?

A. I have. I have not seen them at any of defendant's licensee's plants to my knowledge. I don't know that I can tell the exact spot where I have seen them. I saw them in Chicago in a plant that manufactured lamps. I don't remember that address.

The purchasing agent of this lamp concern told me that he had purchased these blanks at Gibbons Company, Chicago. I don't remember the purchasing agent's name. Those blanks which I saw and which I was told had come from the plant of Gibbons Box Company, were just the same as the blanks which I have described in connection with Plaintiffs' Exhibits 28, 29, 34 and 35. I think it was some time in the last of March or the first of April, 1926, that I saw those blanks that I was told had come from the Gibbons Box Company.

Q. 240. When you see a blank which has been made by defendant's so-called alternate cleat method, is there anything on the blank itself to show that it has been made by the alternate cleat method?

A. A blank made by the alternate cleat method has cleats stapled to only two sections that is two cleats to each of

two sections, the remaining two sections have no cleats attached.

When I see a box in finished form which has been made according to defendant's alternate cleat method, there is something on the box to indicate that it has been made according to the alternate cleat method. At each end of two of the side sections of a box made by the alternate cleat method you will find two rows of staples over the binding wire that lie over the cleats of these sections. One of the rows of staples are made from 17 gauge stapling wire and the second staples are made from 16 gauge staple wire; however, in some cases the side sections of the alternate cleat blank where the cleats are omitted, these sections will only have one row of staples made from 17 gauge wire and these side sections will be fastened to the cleats of these sections by nails. When I see a blank made by [fol. 956] defendant's so-called precleating process, there is something on the blank to show that it has been made according to defendant's precleating process. In a blank that is made by what is known as the precleating method, two of the sections have their cleats fastened at each end of these sections by nails or staples before the box parts are assembled in the blank machine and after these parts have been assembled in the blank machine and the binding wires stapled thereto, these sections that have been precleated will show the fasteners which consist of nails or staples, under the binding wire, and the binding wire is fastened to these sections by staples being driven over the binding wire, through the side sheets and into the cleats.

When a blank is made as illustrated in Plaintiffs' Exhibits 28, 29, 34 and 35, it does not contain any extra fastenings, either staples or nails, besides those used to secure each wire by a single row of staples.

Referring again to the blanks that I saw at the lamp company, and which were said to have come from the Gibbons Box Company, the third method of making box blanks as used on defendant's machine had been employed in making that blank according to the indications of the blank itself.

Direct examination closed.

Cross-examination.

By Mr. Cox (without waiving objections):

X Q. 247. Mr. Steele, when you were asked to illustrate defendant's machine, why didn't you refer to the stipulated drawings Exhibits 28 and 29, which as you say are more complete, instead of to Plaintiffs' Exhibits 34 and 35?

A. Because these were the drawings Exhibits 34 and 35 were the drawings made under by [my] instructions.

X Q. 248. Why didn't you give instructions to have the drawings complete enough to make it plain to the court that the defendant makes an endless chain feed machine with stationary channels for supporting and guiding the cleats and sheets?

A. Because I thought and do yet that this drawing was elaborate enough to explain to the court anything I had to explain (witness pointed to Plaintiffs' Exhibits 34 and 35).

X Q. 249. In this third type of defendant's machine so called, which is the basis for the second supplemental bill of complaint, what is it that supports the cleat?

[fol. 957] Mr. Janney: Objected to as immaterial and irrelevant because what supports the cleat from beneath has no relation to any of the issues.

A. The cleat guideways or channels support the cleats and hold them on a horizantal plane.

It is the side walls of the cleat guideways or channels that prevent the cleats from moving laterally.

I do not remember the name of the man that I said I met at the Maxwell Brothers' plant at Macon, Georgia, as a representative of the defendant. I doubt very much if I was told his first name. I do not recollect whether I heard them refer to him as "Jimmy."

Ross Miller is the manager of the Maxwell Brothers' plant at Macon, Georgia. I don't think I know of any man they had in immediate charge of the machine.

X. Q. 256. Did you meet an employee down there by the name of Tony?

A. There was an employee there from the Maxwell Brothers' plant in Chicago, so I was told, and I have seen this man at their plant in Chicago. His name I don't know.

I met one of the Maxwell brothers at the plant at Macon when I was there.

The machine at the Maxwell plant at Macon had the bumpers or retarders which I have called detents, and which are shown in blue at 35 and 38 in Plaintiffs' Exhibit 34, at the inside of the channel instead of the outside. When I was having these drawings made I just showed them that way because their function on the inside of the channels are just the same as this one shown in Plaintiffs' Exhibit 34 at 35 and I was not sure as to the shape of the detent on the inside of the channel on the machine I observed at Maxwell Brothers at Macon.

X Q. 260. But their functions would not be exactly the same, would they, because if these parts which I prefer to call retarders were on the inside of the channel they would in pressing against the sides of the cleats press them away from the fingers on the pusher blocks 7 and 8 instead of toward them, wouldn't they?

By Mr. Laughlin: The form of the question is objected to because the witness in his direct examination clearly differentiated between the detents on the inside and the detents on the outside of the channel, and described that their function was the same with respect to maintaining the cleats against the blocks at the rear.

[fol. 958] A. The detent on the inside of the channel is just the same as the detent on the outside of the channel, that is, this detent forces the cleat backward and away from the point of the detent. The channels or cleat guides on defendant's machine is of a width that the detent could not move the cleat laterally in these channels but very little as there is only a slight clearance in these channels over the width of the cleats.

It is obvious that if the retarder or detent is on the outside of a channel it will press the cleat against the inner wall of the channel, whereas if it is on the inner side of the channel it will press the cleat against the outer wall of the channel. There is ordinarily approximately 1/16th of an inch

lateral play of the cleat in the cleat guide. Ordinarily the finger on the pusher block engages the shoulder of the cleat and not the ends of the tongues.

X Q. 264. And this 1 16 of an inch would be plenty to enable the finger to engage the shoulder of the cleat instead of the end of the tongue?

A. I can't see why the 1 16 inch clearance in the channel would have anything to do with the cleat positioning fingers of the space blocks engaging with the end of the tongue.

X Q. 265. If the cleat were held in contact with the outer wall of a channel the finger on a pusher block could not engage the end of a tongue of the cleat, could it, if the machine were operative at all?

A. That would largely depend on the length of the cleat of that section. The detent strikes the groove or front end of the cleat and not necessarily at the time the detent hits the front end of the cleat would the rear end of the cleat be over against the outer wall.

It engages the front end of the cleat only momentarily, but the side of the cleat throughout the length of the cleat; but the tension on the spring of the detent on the machines that I have observed has not been of a strength to force the rear end of the cleat against the outside wall after one or two staples have been driven in the front end of the cleat.

X Q. 267. You are willing to admit, aren't you, that if the cleats are kept in contact with the outer wall of the channel, the fingers will have no tendency to engage anything but the shoulders of the cleats, regardless of how far forward the cleats are?

A. I will admit that if the cleat is made to proper size and the tongues properly manufactured and the tongue end of the cleat is held against the outer wall, that the cleat positioning finger at the rear of the first section could not en- [fol. 959] gage the ends of the tongues of the cleats, but in actual practice we find that all cleats are not properly manufactured as to their tongue ends and in this instance having the finger of the block at the front end of the front section omitted, the tongue would occasionally engage on the cleat positioning finger of the block at the rear of the first section.

X Q. 268. The statement that you made in your last answer and which you limited to the first section is true also with respect to the cleats of the other sections, isn't it?

A. It would be, provided the block in front of the cleat of that section be omitted.

Referring to the advance blocks 11 and 12, Plaintiffs' Exhibits 34 and 35, I personally saw those blocks used by defendant's licensee at the Maxwell Brothers' plant at Macon, Georgia, about the middle of May, 1926.

By Mr. Cox: In view of the last answer of the witness the testimony of this witness so far as it relates to things not shown in the stipulated drawings Plaintiffs' Exhibits 28 and 29 and particularly with reference to the blocks 11 and 12 of Plaintiffs' Exhibits 34 and 35 is objected to as having occurred subsequent to the date of filing of the supplemental bill of complaint. Cross-examination is continued without waiving this objection.

By Mr. Laughlin: It happens that the witness observed the operation of defendant's machine at Macon, Georgia, subsequent to the date of filing of plaintiffs' second supplemental bill of complaint, but a comparison has been made by the witness between drawings Plaintiffs' Exhibits 34 and 35 and the stipulated drawings Plaintiffs' Exhibits 28 and 29, which latter drawings, by stipulation, accurately illustrate the machine used by defendant's licensees and furnished by defendant prior to the filing of plaintiffs' second supplemental bill and at the present time.

I did not obtain a sample block from the Maxwell plant there like blocks 11 and 12.

X Q. 272. Did you carefully examine the operation of the machine with blocks 11 and 12 on it?

A. I took particular notice of the spacer blocks and their arrangement on the chains as to the set-up of this blank as the machine was in operation.

X Q. 273. Isn't it a fact that you never saw at Macon or any other plant of a licensee of defendant any kind of a [fol. 960] block in the general position of blocks 11 and 12 that were not at least half an inch in advance of the advance end of the advance cleat of the blank? I am referring,

of course, to that part of the block which would be in the line of the cleat?

A. The fingers of the blocks that protrude into the cleat guideway that was fastened on the chain at the front end of the first section of the blank, the rear portion of this finger being flush and in line with the rear face of the sheet positioning fin of the block, was what I saw at the Maxwell Brothers' plant at Macon, Georgia.

I wish the court to understand it as my testimony that Plaintiffs' Exhibits 34 and 35 are correct in this particular and that in a machine as I saw it in Macon the advance ends of the advance cleats were practically in engagement with the finger of the block ahead of them.

X Q. 275. Don't you know as a practical operating man that there must be clearance so that the cleats can be introduced into the machine rapidly and while the feed chains are in operation by practically unskilled labor?

A. It is a fact that in some of the machines that I am perfectly familiar with and that I have operated myself and where the space blocks are made fast to the chain by a rivet, it is a common practice to have these space blocks where the cleat engaging fingers at each end of the cleat are of a distance apart 1 32 inch longer than the entire length of the cleat. This allows 1 32 inch clearance between the cleat positioning blocks and the extreme ends of the cleat.

X Q. 276. But there isn't any clearance at all shown in Plaintiffs' Exhibits 34 and 35, is there, at the front end of the front cleats?

A. To my knowledge there isn't any clearance shown in any part of the machine parts or the box parts shown in Figures 34 and 35, which is all right in theory but not in practice.

By Mr. Cox: In view of the last answer of the witness the drawings of Exhibits 34 and 35 are objected to as inaccurate in that they do not indicate any clearance where clearance exists in the actual machine.

By Mr. Laughlin: There is ample previous testimony in this case that these slight clearances are always provided for because of the slight variations existing in the dimensions of the box parts used. Referring to the stipulated exhibit Plaintiffs' Exhibit 29, for example, the sheet of the

[fol. 961] second section is shown exactly 8½ inches wide and the sheet of the third section exactly 8 inches wide and both edges of each sheet contacting with the adjacent sheet spacing fins. Likewise in Fig. 2 of Plaintiffs' Exhibit 29, the cleats are shown of exact given lengths. It is understood that the drawings stipulated by counsel, Plaintiffs' Exhibits 28 and 29, and also the drawings Plaintiffs' Exhibits 34 and 35, represent ideal constructions on the assumption that each box part is precisely dimensioned.

In my answer to X Q. 275 I was referring to plaintiffs' machine in which the cleats are actually supported by carrier chains.

X Q. 278. Was Mr. Maxwell or anyone else in authority present at the machines at Macon when you say you saw blocks like the ones numbered 11 and 12 in Plaintiffs' Exhibits 34 and 35?

A. Mr. Maxwell and Mr. Miller were standing probably fifteen feet to my left and probably ten feet from the blank machine at the time I was watching the operation of this machine and I was standing with my hand resting on the front end of the machine at the right of the machine, the mechanic of the Saranac Automatic Machine Corporation standing close by my side.

I did not have any discussion with these men with reference to the blocks 11 and 12.

The blocks like those shown in Figs. 2 and 3 of Plaintiffs' Exhibit 34, do not have anything in the path of the cleat except the fingers 6 and 9 and in every case the backs of these fingers is at least half an inch in advance of the advance ends of the cleat behind when the latter is in engagement with the finger that pushes it.

X Q. 282. Suppose a cleat were stapled to a sheet, when the cleat was in engagement with the back of the finger in the block ahead of it, the resulting blank would be incapable of folding, wouldn't it, that is, it would be what they term in the trade a cripple?

A. As to the Figure 1 in drawing 34, this would happen in every instance except in the first section.

X Q. 283. What is it in defendant's machine that prevents such an occurrence with the cleats of the second, third and fourth sections?

A. It is what has been termed as the detent that holds the shoulder of the tongue end of the cleat against the face of the cleat positioning finger prior to and at the time the first staple is driven in that section.

As I remember I testified that you could substitute for [fol. 962] blocks 11 and 12, the block shown in Fig. 3 and the corresponding block, or block shown in Fig. 2 and the corresponding block of Plaintiffs' Exhibit 34 and get the same blank as shown in Fig. 1 of Plaintiffs' Exhibit 34.

The employment of a special form of block like Figures 11 and 12 is not necessary if you provide for that block a finger that protrudes into the pathway of the cleats, so that the distance of the rear face of this finger from the grooved end of the cleat, with the shoulder of the tongue end of the cleat against the cleat positioning finger on the block at the rear of this section, is less than seven-eighths of an inch.

When the blocks 11 and 12 as I have testified arrive at the bumpers or detent 35, 38, the curved end of the detent will be forced out of the path of the cleat by the finger on the space block. The detent does not perform any necessary function for the first cleat; it may push the cleat inward toward the inner wall of the guide, as shown in this drawing. But it would perform a function in holding the cleat back against its pushing finger if instead of using a special type of block like 11 and 12, they used a standard form of block like either Fig. 2 or 3. While it is always the best practice in engineering to keep the number of types of machine parts as low as possible, providing it does not render the machine or its operation inferior, I was not surprised that they employed these special blocks 11 and 12 at Macon, as blocks as shown at 11 and 12 are much cheaper to manufacture than either of the blocks shown in Figs. 2 or 3 of Plaintiffs' Exhibit 34.

X Q. 293. But you would have to have spare blocks in stock, wouldn't you, in any well managed factory, and this special block would call for an additional kind of spares to be kept on hand?

A. To my knowledge, spacer blocks are usually furnished with blank machines in sets, of which it takes ten blocks to a set, and every manufacturer of 4-One box blanks must have sets enough to make blanks of the shortest cleats as well as

longer cleats, and to my knowledge there is always a surplus of space blocks on all blank machines unless it would be occasionally in the extreme short cleated box.

In actual commercial practice the cleats vary in length as to the different size boxes.

X Q. 295. But I mean for a given set-up, or a given size box, the individual cleats for a given side vary among themselves, don't they, due to inaccuracies of manufacture?

[fol. 963] A. In all tenoning machines that I am familiar with or that I know of, the cleats in the process of manufacture pass between two trim saws which cut these cleats to exact length and the length of the cleat can only vary in overall length what the spring of these saws might be, which could hardly be detected with the average carpenter's rule.

In defendant's machine there is back pull on the wires.

X Q. 297. Have you any knowledge as to whether these alleged blocks 11 and 12 were made at the Maxwell plant or by the defendant Saranac Automatic Machine Corporation?

A. I have no knowledge as to where they were made only that they were cast blocks and the Maxwell Brothers' plant at Macon, Georgia, was not equipped to do any iron molding or casting.

X Q. 298. Keeping in mind now that in plaintiffs' machine the cleats rest upon and are transported by carrier chains whereas in defendant's machine the cleats are supported in stationary guide channels, and pushed along in them by a block with fingers which engage the shoulder of the cleat, and keeping in mind that the motion of the block is an intermittent one, what in your judgment is the closest fit that would be practical for the front cleats between the alleged blocks 11 and 12 and the fingers which push these cleats?

A. It has been our practice; it has been the practice of the manufacturers of wirebound boxes using the licensed machines of the 4 One Box Machine Makers, to allow a clearance over the length of the cleat between the space blocks of approximately 1 32 of an inch. In Fig. 1 of Plaintiffs' Exhibit 34, using blocks as shown at 11 and 12, the clearance over the length of cleat between the tongue of the cleat and the extreme end of the groove of the cleat from the

face of the cleat positioning finger on the spacer block at the rear of the cleat and the protruding finger that protrudes into the cleatway on the block at the front of the first section, the clearance should be practically the same. In using a block as shown in Fig. 2 or Fig. 3 of Plaintiffs' Exhibit 34, at the front end of section 1, clearance between the rear face of the finger of blocks as shown either in Fig. 2 or Fig. 3 and the face of the cleat positioning finger at the rear of first section, may have a clearance over the length of the cleat measuring the cleat from the shoulder of the tongue end to the groove end of the cleat to something less than seven eighths of an inch.

X Q. 299. You do not give it as your opinion, do you, that [fol. 964] it would be practical for the cleat layers if defendant's machine had only 1 32 of an inch longitudinal clearance for the cleats?

By Mr. Laughlin: This line of questioning is objected to for the reason that there is a great deal of testimony in the case to the effect that "clearances" are always provided in this art for the convenient assembly of the box parts. The attention of defendant's counsel is again invited to Plaintiffs' Exhibit 29, which defendant's counsel has stipulated is an accurate representation of defendant's machine parts and box parts assembled thereon.

By Mr. Cox: The witness may confine his answer to a machine rigged in accordance with the showing of Plaintiffs' Exhibits 34 and 35 and may confine the answer to the front cleats of the blank.

A. Yes, sir.

X Q. 300. Well, assuming, for the sake of argument, that it were possible for a cleat feeder to get the front cleats in between the block 12 and the block behind it with a clearance of only 1 32 of an inch, you will at least admit, won't you, that it would be easier if there were $\frac{1}{16}$ inch to $\frac{5}{8}$ of an inch clearance as with the rest of the cleats?

A. Yes, sir.

There would be that advantage at least in using ordinary finger blocks like those in Figs. 2 and 3 of Plaintiffs' Exhibit 34 instead of the blocks 11 and 12, especially with inexperienced cleat layers.

X Q. 302. If the cleats were properly formed the fingers of pusher blocks like Figs. 2 and 3 of Exhibit 34 would

as intended, would they?

By Mr Laughlin: Objection is made to this question not only because it is hypothetical but because the result described is impossible in the machine illustrated in the drawings Plaintiffs' Exhibits 28 and 29, which counsel for defendant has agreed accurately portrays defendant's machine, and the result is likewise impossible in the machine shown in Plaintiffs' Exhibits 24 and 25.

A. If the blocks 11 and 12 in Fig. 1 on Plaintiffs' Exhibit No. 24 or the blocks in advance of the first section in Fig. 1 of Plaintiffs' Exhibit 28 and 29 be used, the tongue end (of the cleat would never engage the front face of the cleat positioning finger.

Q. 303. Perhaps not, but I am trying to develop the fact that in defendant's machine when organized as shown in Plaintiffs' Exhibits 28 and 29, if the cleats and the pusher blocks were properly proportioned, there would be no need for preventing a cleat from moving more than ¾ of an inch ahead of its pusher, that is true, isn't it?

A. That is true in theory, but in practice with the working clearance of the endless chain and also with the clearance of the cleats in the channels, and of the cleats being warped or crooked, I am sure in actual practice that occasionally the tongue end of the cleat at the extreme end of the cleat would engage the face of the pushing finger, if the cleat would be allowed to move forward from engaging the shoulder of the tongue of the cleat against the face of the cleat positioning finger ¾ inches or more.

Q. 304. In Q. 234 you were asked whether you had seen any other blanks made by defendant's licensees other than the ones that you had seen at Macon, which bore evidence of their having been made from eight loose cleats and four loose side sheets. You answered that you had. How did you distinguish these blanks from the blanks made by plaintiffs?

A. I was told by the purchasing agent of this plant that these box blanks had been delivered to them by the Gibbons Box Company. I also noted that the staples driven over the binding wires that did not overlie the lines of the cleats were made of 17 gauge stapling wire and I know that it is impossible to use 17 gauge stapling wire in the

I also noted that the loop or top end of the staples were not formed over what is termed as a standard loop bar as made and furnished for the machines and by the Acme Box Machine Makers.

These are not differences that alter the characteristics of the blank as a blank. I consider that except for the differences I have noted, the blanks made by defendant's licensees on the machine of the stipulated drawings, Plaintiffs' Exhibits 28 and 29, are the same as those made by plaintiffs' licensees on plaintiffs' machine.

By Mr. Cox: Defendant's counsel asks plaintiffs' counsel whether he is willing to state on the record whether or not the blanks made by plaintiffs' licensees on plaintiffs' machine (end cleats are not like and were covered by, up to the time of its expiration, plaintiffs' patent 709,854, which in consequence litigation has been called the box patent?

By Mr. James: Before the box reissued patent (based upon this patent 709,854, just named by defendant's counsel) had expired, defendant's present counsel and defendant's expert, Mr. McElroy, had strenuously contended that the alternate cleated type of box did not infringe said reissued patent. A box made from the blank indicated in Plaintiffs' Exhibits 28, 29, 34 and 35, as a product of a method practiced in part by defendant's machines, is the unmistakable mechanical equivalent of the box made from the alternate cleated blank. Hence modifying the hypothesis suggested by defendant's counsel, and assuming that the box reissued patent were still alive, defendant's counsel and expert would undoubtedly be consistent enough to urge that defendant's present box made by the eight loose cleat method would not infringe the box reissued patent.

As a matter of fact, however, all of the boxes made by defendant's three methods or any of them, and also the boxes made with the use of plaintiffs' machines by plaintiffs' licensees, considering them as products independently of the methods and machinery by which they are made, embody the invention which was described and claimed in the box reissue patent. The sole exception to be noted is the so called open corner box at one time made by one of defendant's licensees to escape the narrow terms

of the claims of the box reissued patent and thereby to evade the effect of a preliminary injunction which had been issued under the box reissued patent against the making by defendant's said licensee of the alternate cleated box.

Although, in deference to the question by defendant's counsel, I have made the foregoing answer, both the question and the answer are immaterial and irrelevant to any of the issues of this suit.

If defendant's counsel proposes to contend that this question of the scope of the now expired box patent is relevant here, it may be notworthy that the exact blank and boxes now made by plaintiff's licensees on plaintiffs' machines, and equally the boxes and blanks made by defendant's licensees upon defendant's machines, would still embody the invention of the expired reissued box patent, considering them as products, if they had been made by the so-[fol. 967] called "modified Rosback method" described by the experts for the respective parties in the earlier stages of this suit, or had been made by some other method and upon some other machinery wholly different from the machinery and method now employed by defendant, which alone are in issue under the second supplemental bill.

By Mr. Cox: Defendant's counsel had not supposed that the question would require such an elaborate explanation. Since plaintiffs' counsel has deemed it advisable to bring in details of the companion litigation, it may not be out of place to remark that the temporary injunction was granted almost immediately after the defendant in that litigation started to operate and that thereafer there was no intimation on plaintiffs' part that the injunction was ever violated. As to the "unmistakable mechanical equivalent" it may not be improper to recall that the only court which has passed on this question after a hearing on the merits apparently has arrived at a different conclusion from plaintiffs' counsel.

Cross-examination closed.

Redirect examination.

By Mr. Janney:

R. D. Q. 308. In the commercial practice by plaintiffs' licensees in which customarily there is a spacer block at

the advance end and another at the rear end of each cleat, what have you observed as to the practice with reference to the clearance between the cleat ends and blocks allowing a certain amount of possible movement of the cleat lengthwise between the blocks. What I am interested to know is, what amounts of such clearance have you observed in actual commercial practice?

A. As an instructor for the licensees and their help to manufacture box-blanks on the machines furnished by the 4-One Box Machine Makers, I instruct the help to hold the clearance of the cleats between the blocks as close as possible, and have always stipulated to them that 1/32 of an inch clearance was the practice that I would like to have used in order to insure a good tight tensioning of the wire over the folded box corner. However, I have noted in actual practice that that clearance has varied from 1/32 of an inch to as much as 1/8 of an inch and still make blanks that can be folded and made into boxes and marketed without any complaint from the box user.

[fol. 968] In ordinary practice in making tongue and groove cleats such as illustrated in Plaintiffs' Exhibits 28 and 29, 34 and 35, the width of the tongue on the cleat is slightly less than the width of the groove. Just enough clearance is provided for to allow the cleats to mesh without being forced with the hammer or mallet. The fit of the tongue into the groove is a loose fit.

The function and effect of this arrangement indicated by the numeral 45 in Plaintiffs' Exhibit 28 and Plaintiffs' Exhibit 34, the part consisting of the three longitudinal bars connected by a cross bar at their end, is to hold the sheet sections flat on the cleats of the same section. It is a pressure bar. The successive sections slide under that pressure bar 45.

Redirect examination closed.

Recross-examination.

By Mr. Cox:

R. X Q. 314. In the plaintiffs' machine, if a cleat is misplaced, there is nothing to prevent its remaining displaced, whereas in defendant's machine, if a cleat is misplaced by

the cleat layer the machine automatically corrects the placing before the staples are driven, isn't that true?

A. In the plaintiffs' machine it is impossible to misplace the cleats and in defendant's machine it is possible to misplace the cleats but should they be placed with the shoulder of the tongues against the faces of the cleat positioning fingers at the time they were placed in the machine they would be thrown out of their exact position by the intermittent step motion of the machine before they had reached the stapling point.

R. X Q. 315. But the detent or bumper 35 would automatically correct the placing before the staples are driven, is that correct?

A. The curved end of the detent would position the cleat in its proper position relative to the sheet edges of that section prior to and at the time the first staple of that cleat was driven.

Deposition closed.

Signature and notarial certificate waived by agreement of counsel.

By Mr. Janney: Plaintiffs here close their prima facie proofs under the second supplemental bill.

[fol. 969] EVIDENCE ON BEHALF OF DEFENDANT UNDER THE SECOND SUPPLEMENTAL BILL

EXPERT AFFIDAVIT OF JOHN HOWARD MCELROY, OFFERED ON BEHALF OF DEFENDANT

JOHN HOWARD MCELROY, of Chicago, Illinois, being duly sworn, deposes and says as follows:

I have previously testified in this suit, and I am familiar with the so-called "defendant's third method," as referred to in the recent deposition of Roscoe Steele, and as practiced by the Maxwell Brothers in their box factories, for I have recently visited the Maxwell Brothers' factory here in Chicago, and have observed the construction and operation of the machines upon which this said method is being practiced in the production of wirebound boxes. As a result of my investigations, it would seem to be very clear

that defendant's third method, so called, and the machinery for practicing this method, are fundamentally and in principle the same as those previously complained of. In my judgment defendant's first and second and third methods, and the machine for practicing these methods, are all simply the old pusher method of Rosback No. 608,796, and others, and are all based on the same principle.

Defendant's third method involves the frictional pushing of cleats in stationary guides, exactly like Rosback No. 625,958, and others, and involves the use of stationary retarding elements for insuring engagement of the cleats with their pushers while passing under the stapling mechanism, just as do many of the methods and machines of the prior art, such as Rosback No. 614,348, and others, in which the pusher method is employed.

Defendant's so-called third method is, however, specifically distinguished from previous methods by the use of pushers which engage the shoulders of the cleats, instead of engaging the extreme rear ends of the cleats. In this way the tongues of the cleats might be a trifle too long, or a little too short, and such discrepancy or inaccuracy or variation would not make any particular difference, and would not interfere with the proper dimensioning of the box, inasmuch as the pushers engage the shoulders and not the rear ends of the tongues. It is the position of the shoulders on the side sheets which determines whether or not the box is properly constructed and not the position of the ends of the tongues, and by properly positioning the pushers to engage the shoulders, the desired accuracy of the [fol. 970] construction of the box is secured regardless of inaccuracies or variations in the overall length of the cleats, for if the shoulders are properly positioned in the box blank assembly, or in the preliminary blank, the desired accuracy for the ultimate box will be insured.

Furthermore, in the defendant's so-called third method, there is nothing interposed between the adjacent extreme ends of the cleats, and any cleat behind is free to move forward and engage the rear end of a cleat in front, but like Rosback, Knudtson & Uhri and others, the frictional retarding means in defendant's third method, as in defendant's first and second methods, serve to keep the cleats back against their allotted pushers while the assembled sheets and cleats are passing under the stapling mechan-

ism, thereby insuring the proper relative positioning of the sheets on the cleats at the time that they are stapled together. With this so-called third method, as practiced on the defendant's licensee's machines, the adjacent ends of the cleats can be either nearer to each other or farther apart, and can be so close together that they practically touch, and this can be taken advantage of to insure much greater tensioning of the wires than can be obtained by the spacer system or method, for when spacers are used the cleat ends cannot touch each other and hence defendant's new or third method not only uniformly and predeterminedly and accurately positions all of the cleat shoulders in the ultimate box, but also permits of greater tensioning of the wires.

In the defendant's so-called third method, as in defendant's first and second methods, there are no spacer blocks whatever, in my opinion, and certainly there are no spacer blocks in the sense that there are blocks which are placed in the path of the cleats and between the ends of the cleats. In his deposition, Roscoe Steele has referred to the blocks on defendant's chains as spacer blocks, but in my opinion this is a misnomer, and is misleading, as it implies a spacing function for these blocks, whereas they have no such function. A spacer block, properly speaking, is a block which is placed between the ends of the cleats initially to position the cleats relatively to each other, so that a true spacer block must serve to position the cleat very accurately by engaging the cleats on its rear side, as well as on its front side. Spacer blocks are necessary in devices such as are shown in plaintiffs' patents, when the cleats are carried upon a moving structure, for in such case there is no frictional retardation to shove the cleats back into position if [fol. 971] they jump forward or get out of position, and hence the spacer blocks must function to engage cleats on both their front sides and their rear sides in the initial setting up of the blank. The blocks on defendant's chains, in defendant's third method, as well as in defendant's first and second methods, are not in the path of the cleats, but on the contrary travel in two parallel rows on the chains or link belts between the two rows of cleats. The pusher fingers on defendant's blocks project into the path of the cleats, but are incapable of any spacing function, as they are simply formed to engage the shoulders of the cleats,

and this shoulder engagement is insured and maintained by the frictional retarding means previously mentioned. In order to avoid confusion, therefore, plaintiffs' method and the method of the patents in suit is properly called the spacer method, whereas defendant's so-called third method, as well as defendant's first and second methods, are properly called the pusher method, and the term spacer or spacer block is entirely unwarranted and is misleading when used in connection with any of defendant's methods. None of defendant's pushers are required to have any positioning function on their rear sides. The rear sides of defendant's pushers may occasionally limit the distance that the cleats can jump ahead, during the jerky intermittent feeding motion of the link belts and the blank materials along the machine, but it cannot be said that the rear sides of defendant's pushers have any positioning function, for if the cleats were in contact with the rear sides of the pushers, at the time that the sheets and cleats are stapled together, the blank would be defective and would not fold into box shape. In the devices shown in plaintiffs' patents the rear sides of the spacer blocks must have a positioning function, and must be prepared to accurately position the cleats, so that when the cleats engage the rear and the front sides of the spacer blocks, the cleats and sheets are in accurate relative arrangement for the stapling operation by which they are fastened together. That is one of the differences between a pusher and a spacer, namely, that a pusher such as is employed in defendant's machines does not need to have its rear side shaped or adapted to perform any function whatever, whereas in the spacer method or spacer system of the patents in suit each spacer must necessarily be shaped and adapted to function on its rear side as well as on its front side. Assume, for example, that the structure of the patents in suit be modified by cutting away the rear sides of the spacer blocks, leaving a space at the front end of each cleat. In such case it is obvious that the blanks [fol. 972] may be defective, even though the cleats were initially all accurately positioned with their rear ends against the front sides of the spacer blocks, for without the properly designed rear sides of the blocks functioning to hold the cleats from movement there would be nothing to hold the cleats against jumping ahead and thus getting out of place, and should that occur there is nothing in the

structure of the patents in suit to put the cleats back with their rear ends firmly against the front sides of the spacer blocks, for in the structure of the patents in suit there is nothing to frictionally engage the cleats during their movement through the machine, and there is nothing that constitutes any cleat retarding means, such as the retarding means of Rosback Nos. 614,348 and 625,958, or Knudtson & Ubri No. 518,238, and such as used in all of defendant's machines. The spacer method, which is the interpositioning of spacer blocks between adjacent ends of the cleats, with the blocks shaped to initially position the cleats relative to each other, and with each block shaped to have a positioning function on both its front and rear sides, is absolutely essential and mandatory in the patents in suit. But, in all of defendant's methods, the basic and fundamental principle involved is that of the old Rosback pusher method in which the cleats are pushed along in stationary guides, and in which stationary retarding means are employed to engage the cleats and keep them back against the pushers.

In Plaintiffs' Exhibits 34 and 35, the link belts are shown as having the fingers or lugs 11 and 12 which reach outwardly and tightly engage the front ends of the front cleats, but in making my investigations I have found no such construction or arrangement or method in defendant's machines as used in the Maxwell Brothers' factory, and I have never seen any such arrangement of parts on any of defendant's machines. In all of defendant's machines, upon which the so-called "defendant's third method" was being practiced, as observed by me, there was something more than a one-half inch of play or space at the front end of each cleat, including the front cleats, and this is desirable and necessary in order that the cleats may be dropped in place quickly, in the stationary guides, and it would be difficult to do this if blocks such as the blocks 11 and 12 of Plaintiffs' Exhibits 34 and 35 were employed, as the fingers on these blocks are shown tightly engaging the front ends of the front cleats, while the regular pushers are in tight engagement with the shoulders near the rear ends of these same cleats and this would cause the operator or attendant [fol. 973] or stock feeder more or less trouble, as it would be difficult for him, if not impossible, to force the two front

cleats into place while the machine was in operation, especially if the machine were running at a commercial speed. The stock feeder who places the cleats in the machine must do this work while the machine is running at high speed, and with the pusher system this is possible, inasmuch as nothing is required to engage the front ends of the cleats to properly position them in the blank, and hence the cleats can be dropped in quickly and even carelessly, for the stationary retarding means will rectify or correct any misplacement of the cleats, and will insure that the rear ends of the cleats are held tightly against the pushers while the sheets and cleats are passing under the stapling mechanism. Even if the blocks 11 and 12 of Plaintiffs' Exhibits 34 and 35 should be employed, with the idea of preventing the possibility that the front cleats might jump so far ahead that their pushers would catch on the rear ends of the tongues, it would not be necessary to have these blocks 11 and 12 so positioned that their fingers tightly engage the front ends of the cleats, as it would be sufficient if the blocks 11 and 12 were placed just far enough ahead of the cleats to prevent the possibility of the rear ends of the cleat tongues being engaged by the pushers, so that the cleats could always be pushed back by the retarding means with their shoulders against the pushers before passing under the stapling mechanism. Furthermore, if the cleats are accurately made and if the defendant's machine is accurately proportioned, so that the cleats cannot be displaced sidewise, there is then no danger of the front cleats jumping ahead and having the rear ends of their tongues engaged by the pushers. Blocks or lugs or fingers in front of the front cleats of the blank, in defendant's so-called third method, are not necessary in theory and not necessary in practice when the blocks and guides and other parts of the machine are properly proportioned and made with sufficient accuracy.

In addition, I have carefully examined patent No. 1,565,909, granted December 15, 1925, to Saranac Automatic Machine Corporation, the defendant herein, for "Machinery and Method for Making Box Blanks," and I have found that the drawings of this patent show a machine adapted for use in carrying out defendant's so-called third method, and that the specification and claims of this patent are

accurately descriptive of this method and the machine upon which the method is practiced. Portions of the specifica- [fol. 974] tion of this patent, which in my judgment accurately describe the so-called "defendant's third method," are as follows:

"Thus, the cleat pushers engage the shoulders 26 of the cleats, and it will be seen that these shoulders determine the dimensional characteristics of the box to a more or less extent, when the blanks are folded. The tongues 24, in other words, might be either longer or shorter, without changing the dimensions of the box, so that it is really the position of the shoulders 26 that determines the distance between two opposite sides of the box, and other dimensional characteristics, when the blank is folded into box form. Therefore, the cleat pushers do not extend in between the adjacent ends of the cleats, but simply have lateral engagement with the cleats, at points between the opposite ends of each cleat, and at points which determine the dimensions of the box to a large extent, in the manner explained. Therefore, the cleat pushers are incapable of serving as spacers, in any sense whatever, and are pushers, pure and simple, and have only lateral engagement with the cleats, and while the distance between adjacent ends of the cleats might vary more or less, in the manufacture of blanks for boxes of the same dimensions, such variation in the distance between adjacent ends of the cleats would not affect the dimensions of the ultimate box, or in any way interfere with the proper folding of the preliminary blanks to produce such boxes. In other words, the tongued or grooved ends of the cleats could be either longer or shorter, but this would not affect the dimensions of the ultimate box, as the cleat pushers engage the shoulders 26 on the inner sides of the cleats, instead of the rear ends of the cleats. Hence, certain kinds of inaccuracy in the cutting of the cleats is prevented from interfering with the correct dimensions of the boxes." Page 2, lines 62 to 103, inclusive.

"Moreover, with this arrangement and method, blanks can be made with the tongues actually inserted a distance into the grooves of the adjacent cleats, for the blanks are not made by inserting anything between the cleats, and hence, should it be desirable, for any reason, the ends of the

tongues can project a distance into the grooves without in any way interfering with the proper feeding of the cleats and sheets under the staplers. For example, to obtain a very tight box, or to obtain a very pronounced tensioning [fol. 975] of the wire at the corners of the box, when the blank is folded, the ends of the tongues 25 could engage the ends of the cleats behind, or could actually extend a distance into the grooves 24, so that the blanks would fold rather stiffly, and produce greater tensioning of the wires.

"Of course, the rear side of each cleat pusher does not need to be prepared to function in any way, and does not function for any purpose whatever. Only the front side of each cleat pusher, or the side facing forward, has any function. This is for the reason that the pusher system is employed, whereby frictional retardation of the cleats is not only sufficient to hold them back against the pushers, but is also sufficient to stop the forward motion of the cleats, should they become disarranged in any way, as by the jerky forward motion of the feeding means, until they are overtaken by their respective cleat pushers. In other words, any cleat which is not firmly back against its respective cleat pusher will be retarded and held stationary, by the frictional contact of the cleats with the guides and clinch blocks and other things, until its respective cleat pusher catches up with the rear end of the cleat. Hence, as stated, the rear sides of the cleat pushers are not only not necessary for the initial positioning of the cleats in the guides, but are not necessary for the prevention of forward displacement of the cleats away from the cleat pushers, as would be necessary if the cleats were fed forward without any frictional contact with stationary portions of the machine, or if the cleats were merely carried bodily along in spaced relation and without any friction between the cleats and any portion of the machine.

"Of course, it is necessary and essential, to the operation of the invention, and to the dimensioning of the ultimate box in the desired manner, that the cleats all face in the same direction, so that each and every cleat of the blank has its shoulder or shoulders near its rear end, for unless the cleats are all uniformly positioned in this respect, with their engaging shoulders all near their rear ends, the predimensioning of the ultimate box by the shoulders of

the cleats, instead of by the ends thereof, will not be accomplished." Page 3, lines 25 to 91, inclusive.

These quotations from defendant's patent show very clearly the fundamental distinctions between the spacer [fol. 976] method of plaintiffs' patents in suit on the one hand and defendant's pusher method on the other hand. Going back to Rosback, No. 614,348, for example, the pusher method there disclosed calls for as many cleat pushers as there are loose cleats to be pushed. If the blank had twenty cleats, it would be obvious that any machine for making the blank, by the pusher method, would require twenty cleat pushers to push the twenty loose cleats along the stationary guideways of the machine. The number of loose cleats determines the number of pushers and the dimensions of the box the positions which the engaging ends of the pushers must occupy in the machine. When defendant's licensees use only four loose cleats for each blank, and use the wiring operation to also attach the four loose cleats to the bank, four cleat pushers are obviously necessary for each blank. When they use eight loose cleats for each blank and use the wiring operation to also attach the eight loose cleats to the blank, then eight cleat pushers are obviously necessary for each blank. If only two cleats are attached to each blank and these two cleats are attached by the wiring operation, instead of by the precleating method, then only two cleat pushers are necessary for each blank.

In defendant's third method the sheet spacers are precisely like those previously employed in defendant's first and second methods, and like those employed in Rosback, Greenstreet, Lipps & Springer and other prior patents.

For these reasons, therefore, and for the reasons given in my previous affidavits and depositions in this litigation, it is my belief that the so-called "defendant's third method," and the machinery therefor, follow the teachings of the prior patents, such as Rosback Nos. 614,348, 625,958, Knudtson & Uhri No. 518,038, Greenstreet No. 579,574, Lipps & Springer No. 891,998, and others, and involve the same fundamental principles, and do not follow the teachings of plaintiffs' patent in suit. The machine employed in carrying out defendant's so-called third method, as observed by me at the Maxwell Brothers' plant, and as shown

in defendant's patent, has adjustable blocks on the endless chains or link belts, but these blocks are in the nature of flights on a conveyor belt and have the same function that the flights have on ordinary chain conveyors for various purposes. For example, in the prior patent to Jonas, No. 588,021, the endless conveyor belt is provided with flights for pushing the blanks along the guideway and the Jonas patent says:

[fol. 977] "The detachable wings of the feed chain are also readily adjusted in accordance with the size of the blanks." (See lines 88-99, page 1 and lines 54-56, page 2.)

The pushers on defendant's machines might be called wings on an endless link belt conveyor and they are adjustable for the same reason that the flights or pushers of Jonas are adjustable, so that blanks of different lengths can be made. In defendant's so-called third method eight loose cleats are used in the wiring operation for each blank, but eight loose cleats are employed in the method disclosed in plaintiffs' expired reissue patent, as pointed out in my previous testimony and affidavits in this litigation. In this expired reissue patent the cleats are secured to the under side of the four sheets by the same staples which secure the wires to the upper surface of the blank and hence it is obvious that in this patent the sheets or sections of the blank are not precleated, but on the contrary the loose cleat method is used, and it is obvious that the cleats must be preformed in the sense that they are cut and properly shaped before being secured to the sheets or sections of the blank. Therefore, the defendant's so-called third method follows the teachings of the expired prior art patents, not only with respect to the use of stationary guides and cleat pushers, but also with respect to the use of eight preformed loose cleats, and the preforming of the cleats is essential and unavoidable when tongue and groove cleats are used, as such cleats cannot be formed after they are secured to the sheets or sections of the blank. Preformed cleats, however, in making the blank are things which are older than said expired reissue patent. The eight cleats of Bartram No. 260,357, are obviously formed and shaped before being secured to the sheets or sections of the blank. And this is also true of Hamilton No. 373,828; Howenstine

No. 453,479; Walker No. 767,613, and P. J. Healy No. 827,097, and in all of these prior patents the preformed cleats are fastened to the blank before they are fastened or engaged with the end walls of the box. In such patents as Shunk, No. 410,034 and Patterson, No. 441,326, the cleats are preformed, but in these patents the method employed is to fasten the cleats to the heads or end walls before the cleats are fastened to the sheets or side sections of the box. The prior art, therefore, teaches the use of stationary guides; teaches the use of an endless chain conveyor having flights or pushers to propel the cleats along said guides; [fol. 978] teaches the use of as many cleat pushers as there are loose cleats to be pushed along the guides; teaches the use of sheet spacers to space the edges of the sheets apart the required distance; teaches the positioning of cleat pushers in position to push or propel the cleats in proper relation or relative arrangement to each other; and defendant's machines and methods employ all of these things. In defendant's so-called third method, therefore, the only departure from the prior art, as represented by expired prior patents, is the use of shoulder pushers for engaging the shoulders on the cleats, so that these shoulders are used to predetermine the dimensions of the ultimate box, and for properly positioning the cleats in the preliminary blank, and this shoulder pusher method and the machinery for the practice thereof are shown and described and covered by defendant's said patent No. 1,565,909.

As set out in his deposition, Roscoe Steele seems to think that a space or clearance or not more than 1/32" is sufficient at the forward end of each cleat in order to insure easy and quick placing of the cleats in the machine while in motion. In the patents in suit no such space or endwise play of the cleats is shown or necessary, for the spacer blocks are beveled on their front and rear sides, and the cleats are step-mitered, so that when a cleat is dropped in place it settles down to rest between the beveled surfaces of the blocks at the opposite ends of the cleats and in the patents in suit it is not necessary to make the cleats any shorter than the spaces between the spacer blocks. In plaintiffs' commercial machines, when tongue and groove cleats are used, having straight sawed-off ends, the spaces between the spacer blocks may be longer than the cleats,

and the cleats may be shorter than the distance between the spacer blocks, in order to make it possible for the stock feeder to quickly and easily place the cleats in position on the machine. If for this purpose 1/32" space or play at the end of the cleat is sufficient, such space or endwise play of the cleat would not produce imperfect blanks as the shifting of the cleat 1/32" forward or backward, while feeding forward, and the stapling of the sheets and cleats together with the cleats thus shifted 1/32" one way of the other, would not be appreciable in the finished blank, or in the ultimate box. However, there is obviously a limit to the amount of endwise shift or play that the cleats may have in plaintiffs' commercial machines, or in the patents in suit, or in any machine using the spacer method or system, for it is obvious that such endwise displacement must never be [fol. 979] enough to be objectionable in the finished blank and in the ultimate box. In devices and methods of the patents in suit, there is nothing to rectify any endwise displacement of the cleats, could such displacement occur, and there is nothing to restore the displaced or misplaced cleats to proper position before passing under the stapling mechanism, and hence in plaintiffs' patents and methods there can never be more endwise displacement or misplacement of the cleats than would be permissible and practically inappreciable in the blank when finished, or in the ultimate box, for an endwise displacement or misplacement of not more than 1/32" could be perpetuated by the stapling operation without making the ultimate or finished box defective or objectionable. On the other hand, however, in all of defendant's methods and machines, as observed by me, and as exemplified by defendant's patent to Craig, No. 1,565,909, the cleats are free to be displaced endwise quite a distance away from the pushers, and such endwise displacement of the cleats may be half an inch and more, so far as any limitation imposed by the pushers themselves is concerned. When the precleating method is employed, previously attached cleats are held back by the sheets themselves, and if any loose cleats are employed in conjunction with the precleating method, then such loose cleats are kept from jumping too far ahead of their pushers by the fixed cleats on the precleated sections of the blank. In defendant's socalled third method the rear ends of the cleats prevent the cleats

behind from jumping ahead, or from being forwardly displaced, and none of the pushers which actually push cleats, impose any limitation on the forward displacement of the cleats but any forward displacement of the cleats is automatically corrected or rectified by the retarding means before the sheets are stapled to the cleats. In defendant's third method, as exemplified by defendant's patent No. 1,565,909, any forward displacement of the rear cleats, for example, at the rear end of the blank, would be limited by the rear ends of the cleats of the next section and this is true of all the cleats except those at the forward end of the blank, but as shown in this patent, and as observed by me at the Maxwell Brothers' plant, the advance or leading cleats at the front end of the blank are prevented from jumping too far ahead by the pushers carried on the belts in front of each blank. Therefore, in defendant's machines now complained of and in the methods effected thereby the cleats are free to jump ahead and be displaced or misplaced endwise a much greater distance than would be tolerated [fol. 980] or permissible in the ultimate box, and hence the need in defendant's machines and methods of retarding means to rectify or correct any endwise displacement or misplacement of the cleats before they were stapled to the sheets. In carrying out the methods of the patents in suit, there must never be more endwise displacement of the cleats than would be permissible in the ultimate box, as there is nothing to rectify or correct any misplacement of the cleats before they are stapled to the sheets. In all of defendant's machines and methods there is automatic rectification or correction of any endwise displacement or misplacement of the cleats, and the cleats do not have to be in correct position for stapling when initially placed in the machine. In the patents in suit and in previous methods the initial placing of the cleats in a traveling workholder must be accurate, and must be just exactly right for the ultimate box, or at least not more than 1/32" out of place endwise, as the witness, Roscoe Steele, in his deposition has in effect stated.

In defendant's so-called third method, as exemplified by defendant's patent 1,565,909, and as observed by me at Maxwell Brothers' plant, there is nothing between the adjacent ends of the cleats, and hence the cleats may actually touch

each other, either accidentally, or intentionally if much greater tension is desired for the wires in the folding of the blank, and in this respect defendant's third method does not follow the teachings of the patents in suit or of the prior art patents. With the spacer method, as shown and described in the patents in suit, the ends of the cleats cannot touch each other, very obviously, and this is also true of any pusher method in which the pushers engage the extreme rear ends of the cleats, but with the so-called "defendant's third method" there are no spacers between the cleats and no pushers that extend between the adjacent ends of the cleats, and hence the ends of the cleats may practically engage each other either accidentally or intentionally. In any event any and all endwise displacement of the cleats during feeding action, no matter to what extent, is automatically rectified and corrected by the cleat retarding means before the cleats are stapled to the sheets, as observed by me in all of defendant's methods, and in the machine employed in carrying out defendant's so-called third method, as in defendant's other machines, the stationary guides and the endless link belt conveyors having cleat pushers thereon are the fundamental basis of the machine. In this respect defendant's machines and methods are entirely different in principle from the machine and [fol. 981] method of the patents in suit. In the patents in suit, and in plaintiff's methods, any endwise displacement or misplacement of the cleats while passing through the box-blank machine, is necessarily perpetuated in the finished blank, and in the ultimate box, but in all of defendant's methods, any endwise displacement of the cleats, in the box-blank machine, is automatically corrected or rectified, and is not perpetuated in the finished blank and in the ultimate box.

John Howard McElroy.

Subscribed and sworn to before me this 14th day of July, 1926. Laura Grossfeld, Notary Public.

ADDITIONAL EXPERT AFFIDAVIT OF JOHN HOWARD McELROY, OFFERED ON BEHALF OF DEFENDANT

JOHN HOWARD McELROY, of Chicago, Illinois, being duly sworn, deposes and says as follows:

I am the John Howard McElroy who has previously testified by affidavit in this suit. Since submitting my affidavit on or about the 14th day of July, 1926, relating particularly to plaintiff's second supplemental bill of complaint my attention has been called to the fact that I have omitted to state directly any comparison between the Craig patent No. 1,565,909 owned by the defendant and stipulated drawing constituting Plaintiffs' Exhibits 28 and 29. I have been requested to supply the omission and now wish to state that I have actually made such a comparison between the Craig patent No. 1,565,909 and the said Exhibit Drawings Nos. 28 and 29, and find that the machine and method illustrated by said exhibit drawings are the same as and are in exact accordance with the machine and method described and claimed in said Craig patent, and are the same as in the machine and method observed by me in Maxwell Brothers' factory.

John Howard McElroy.

Subscribed and sworn to before me this 19th day of July, 1926. Laura Grossfeld, Notary Public.

[fol. 982] EVIDENCE ON BEHALF OF DEFENDANT, TAKEN, BEGINNING JULY 21, 1926, AT 10 O'CLOCK A. M., AT THE OFFICE OF DEFENDANT'S COUNSEL, CHEEVER & COX, 1133 MONADNOCK BUILDING, CHICAGO, ILLINOIS, PURSUANT TO AGREEMENT OF COUNSEL

Present on behalf of plaintiffs: Howard S. Laughlin.

Present on behalf of defendant: Howard M. Cox.

It is agreed between counsel that Laura Grossfeld, a notary public in and for Cook County, Illinois, may act as Special Examiner under the statute.

And thereupon Mr. Cox on behalf of defendant offers the affidavit of John Howard McElroy as expert, the same

dated July 14, 1926, and the additional or supplemental affidavit of said McElroy dated July 19, 1926, and offers to produce Mr. McElroy for cross-examination.

By Mr. Laughlin: The foregoing testimony of Mr. McElroy is objected to as evasive, misleading and disingenuous. The witness' statement that defendant's three methods and the machines for practicing those methods "are all simply the old pusher method of Rosback No. 608,796 and others and are all based on the same principle" evasively ignores the fact that "the old pusher method of Rosback" is merely a method of feeding two cleat strips, of indefinite length, through a machine, and has no relevancy whatever to the positioning in co-operative foldable relationship, of a series of separate, preformed, individual cleats. The patents in suit relate to these relative positioning functions and whether or not the positioning blocks push after the manner of Rosback pushers is wholly irrelevant. The witness McElroy refuses to meet fairly the issue that defendant employs the same positioning method and substantially the same positioning mechanisms as those disclosed in the patents in suit. Hence, his discussion of "the old pusher method of Rosback" simply befogs the true issue and is misleading.

Again when the witness says "defendant's third method involves the frictional pushing of cleats in stationary guides, exactly like like Rosback No. 625,958, and others,"—his statement is false and deceptive because Rosback does not deal at all with "cleats" but only with indefinitely long cleat strips from which cleats are eventually cut after the rigid preliminary blank has been produced upon the Rosback blank machine. Furthermore, the circumstance that defendant's third method is practiced with "stationary guides" relates merely to the specific manner of feeding the cleats and does not affect in the least degree the fact [fol. 983] that defendant employs the same positioning method and apparatus of the patents in suit.

Aside from the witness' misleading discussions, his testimony contains various mis-statements of fact which will be completely rebutted in plaintiff's rebuttal proofs.

McElroy's testimony is further objected to as argumentative and as presenting little or nothing except an argument under oath.

At the proper time, the various inconsistencies and contradictions in McElroy's present testimony, as compared with his earlier testimony in this litigation, will be pointed out.

All references to, and quotations from patent No. 1,565,909 in the witness' testimony are objected to because the specification of said patent is made up almost entirely of argumentative, self-serving statements prepared by defendant's patent attorneys evidently for the purposes of this litigation. The statements in said patent are misleading; many of them are untrue; the patent is wholly inadmissible as evidence except that defendant has procured a patent.

Plaintiffs give notice of their intention to bring a motion to strike out from McElroy's testimony all references to and quotations from this patent No. 1,565,909.

In view of the foregoing objections, and in view of the disingenuous and argumentative character of McElroy's testimony, plaintiffs' counsel consider that the court would receive no material assistance from a cross-examination of McElroy, but would be best assisted by adequate rebuttal of McElroy's misleading and inaccurate statements. Hence, plaintiffs' counsel will not cross-examine McElroy.

As appears in McElroy's earlier testimony, he is simply a theoretical expert, employed, apparently, to make an argument; he has had no practical experience whatever in the wirebound box industry; his conclusions are mainly speculative. Plaintiffs' rebuttal will be presented by one or more witnesses of long practical experience and thorough knowledge of the actual, mechanical and functional facts.

Recess.

By Mr. Cox: The foregoing is evidently merely an argument in the form of an objection and will be met at the hearing.

Defendant's counsel offers in evidence Craig patent No. 1,565,909 granted December 15, 1925, as Defendant's Exhibit 19 "Defendant's Additional Craig Patent."

[fol. 984] By Mr. Laughlin: The said Craig patent 1,565,909 is objected to because the specification is made up almost entirely of argumentative self-serving statements of an officer of the defendant company prepared by defendant's patent attorneys evidently for the purposes of this litigation. The statements in said patent are misleading; many of them are untrue; and the patent is further objected to as incompetent, immaterial and irrelevant and wholly inadmissible as evidence of anything except that defendant has procured a patent.

By Mr. Cox: The Patent Office by granting the patent approved its contents and form and, hence, counsel's objection merely means that he does not agree with the experts of the Patent Office.

By Mr. Laughlin: The Patent Office is unaware of the pendency of this litigation and is likewise unaware of the causes prompting defendant's patent attorneys in filing the Craig application.

By Mr. Cox: Plaintiffs' counsel must know that the Craig patent must have been considered by the Patent Office strictly upon its merits.

By Mr. Cox: Defendant's counsel offers in evidence Craig patent No. 1,555,189 granted September 29, 1925, to defendant as assignee of said Craig, for "Method and Apparatus for Making Wirebound Boxes," the same to be numbered Defendant's Exhibit No. 20 and Craig patent No. 1,562,413 granted November 17, 1925, to defendant as assignee of said Craig for "Method of Making Wirebound Box Blanks," the same to be numbered Defendant's Exhibit No. 21, the said patents having been set up in defendant's supplement to answer to the first supplemental bill of complaint.

By Mr. Laughlin: The exhibits just offered by defendant's counsel are objected to as incompetent, irrelevant and immaterial.

Deposition closed and notarial certificate waived.

[fol. 985] Evidence on Behalf of Plaintiffs in Rebuttal under Second Supplemental Bill

Appearances: Laurence A. Janney, Esq., Howard S. Laughlin, Esq., for plaintiffs; Howard M. Cox, Esq., for defendant.

Depositions taken pursuant to stipulation and notice at the offices of Emery, Booth, Janney & Varney, 10 South La Salle Street, Chicago, Illinois, beginning at ten o'clock a. m., Thursday, September 9, 1926. Before Robert H. Kammler, a notary public, a special examiner by agreement of counsel.

DEPOSITION OF ROSCOE STEELE

ROSCOE STEELE, a witness on behalf of plaintiffs, being first duly sworn, testified as follows:

Direct examination.

By Mr. Janney:

I am the Roscoe Steele who has already testified on behalf of plaintiffs under the original bill in this suit and also under the second supplemental bill.

For convenient reference, I restate briefly what has been my experience with reference to wirebound box machinery and equipment.

I have been in the employ of the plaintiffs since 1906 continually up until now, in the installation of their machinery and the machinery that is used in the manufacture of wirebound boxes and also to instruct the method of making and handling same.

When I testified in behalf of plaintiffs in plaintiffs' opening case under the second supplemental bill of complaint, I described what was referred to as defendant's third method and machine as illustrated in Plaintiffs' Exhibits 28 and 29. I have already described in the earlier stages of the record in this suit, defendant's first and second methods complained of under the original bill of complaint, and the first supplemental bill, which methods and machines have been called in this record respectively "Defendant's Alternate Cleat Method and Machine" and "Defendant's Precleating Method and Machine."

Q. 5. In testifying for defendant as an alleged mechanical expert, Mr. John H. McElroy, referring to defendant's [fol 986] third method, as shown in Plaintiffs' Exhibits Nos. 28 and 29, made the following statement:

"As a result of my investigation, it would seem to be be very clear that defendant's third method, so called, and the machinery for practicing this method, are fundamentally and in principle the same as those previously complained of."—

i. e., the alternate cleat method and machine and the precleat method and machine.

Do you or do you not agree with Mr. McElroy that all three of defendant's methods and machines complained of in this suit "are fundamentally and in principle the same," using Mr. McElroy's words?

A. Yes, sir; they are. The principles are exactly the same. They deal with the same material, they relate the material in the same way, and they produce the same thing in the same way.

Q. 6. Mr. McElroy further testified for defendant as follows:

"Defendant's so-called third method is, however, specifically distinguished from previous methods by the use of pushers which engage the shoulders of the cleats, instead of engaging the extreme rear ends of the cleats. In this way, the tongues of the cleats might be a trifle too long, or a little too short, and such discrepancy or inaccuracy or variation would not make any particular difference, and would not interfere with the proper dimensioning of the box, inasmuch as the pushers engage the shoulders and not the rear ends of the tongues. It is the position of the shoulders on the side sheets which determines whether or not the box is properly constructed and not the position of the ends of the tongues, and by properly positioning the pushers to engage the shoulders, the desired accuracy of the construction of the box is secured regardless of inaccuracies or variations in the overall length of the cleats, for if the shoulders are properly positioned in the box blank assembly, or in the preliminary blank, the desired accuracy for the ultimate box will be insured."

I want to find out whether or not you agree with Mr. McElroy's statements just quoted, but instead of asking you a general question upon the subject I shall ask you a

series of questions dealing with different aspects of Mr. McElroy's assertions.

[fol. 987] In the first place, Mr. McElroy said, referring to the fact that defendant's third machine uses pushers "which engage the shoulders of the cleats, instead of engaging the extreme rear ends of the cleats":

"In this way, the tongues of the cleats might be a trifle too long, or a little too short, and such discrepancy or inaccuracy or variation would not make any particular difference, and would not interfere with the proper dimensioning of the box, inasmuch as the pushers engage the shoulders and not the rear ends of the tongues."

According to cleat cutting practices as you have observed them, what is the likelihood of cleats being cut "a trifle too long, or a little too short"?

A. In cutting cleats with cleat machines that are used to manufacture cleats in the wirebound industry it is impossible for the cleats to vary enough to make any difference in a wirebound blank, no matter whether they are fed from the shoulders of the cleats or the extreme end of the tongue.

In the cutting of cleats, the trim saws on the cleat machines that trim each end of the cleats at the same time, avoid any material varition in cleat lengths.

Q. 8. What knowledge have you had of these cleat cutting machines?

A. I have practically installed or instructed practically all of the cleat cutting machines that have been used in the industry by the plaintiffs in cutting tongue and groove cleats.

The first cleat cutting machine which I installed for making the tongue and groove cleats was at the Van Camp Packing Company of Indianapolis, Indiana. I don't know that I can give any exact date, but it was prior to 1915 because at the beginning of 1915 I was installing machinery at San Francisco, California. I came back from California in the beginning of May, and I am positive that the cleat equipment was installed at the Van Camp Packing Company before my trip west in 1915 and later in the summer of 1915 I installed a cleat machine with

other machinery for the Atlantic Wirebound Box Company at Boston, Mass., and spent the biggest part of the summer at that plant. I have means of fixing my recollection that I returned from California early in May of 1915. My father died in Indiana the day I left California for home. My father died on the 8th of May, 1915.

I know that the cleat cutting machine which I installed [fol. 988] in Boston in the summer of 1915 was installed at a later date than my installation of the first cleat cutting machine at the Van Camp Company in Indianapolis, because the cleat machine that was installed at the Van Camp Packing Company in Indianapolis was manufactured by the Chase Turbine Machine Company of Orange, Mass., and we had had some trouble in operating that machine, we redesigned that machine to a certain extent in order to make it operable and afterwards when I installed a machine at the Atlantic Wirebound Box Company the changes that were made on the machine at Van Camp's were incorporated on the machine at the Atlantic Wirebound Box Company by the company at Orange, Mass.

Describing the general character of that first cleat cutting machine which I installed at the Van Camp Company some time prior to 1915: The cleat material was fed in this machine on channels by chains with lugs fixed and under pressure bars, the cleat material passing between trim saws which cut the exact length of the cleat and also passing between saws mounted on perpendicular mandrels of which the saws on one mandrel cut the tongue end of the cleat and the saw on the other mandrel cut the grooved end of the cleat.

In that first machine which I installed prior to 1915, there was no opportunity for the cleat to vary in over-all length, because the cleat material passed through between two trim saws which trimmed each end of the cleat material to the exact dimension desired, and as those two trim saws were mounted, they were fixed in relation to each other. These saws could not spring apart or toward each other to make any material difference in cleat lengths.

Q. 21. What would you say would be the absolute maximum of variation in cleat length that might occur by reason of the springing of the saw or otherwise on that first machine that you installed?

A. These saws mounted on arbors as they were held by heavy collars couldn't spring enough so the cleats would vary in length so that it could be detected with a carpenter's rule.

There were no other features of that first machine that might have permitted any variation in the over-all length of cleats.

On that first machine, the tongues and grooves were cut after the cleats had been cut to length by the trim saws. There was nothing in the tonguing and grooving operation on that machine which could have changed the over-all lengths of the cleats. There was an opportunity for [fol. 989] the cleats to move endways after the cleat material had passed the trim saws and that is what caused us trouble in operating this machine. But that opportunity for the cleats to move endways after the cleat material had passed the trim saws did not affect the over-all lengths of the cleats.

This trouble in operating this machine that I refer to was that the cleat material would shift endways and allow this machine to cut a deeper or shallower groove than was intended, or cut a shorter or longer tongue than was intended, and using cleats manufactured that way made inferior boxes. That cutting of longer or shorter tongues and deeper or shallower grooves did not have any effect upon the over-all lengths of the cleats.

In that first machine which I installed, the tendency for the cleat to move endways after it had passed the trim saws and during the tonguing and grooving operation was caused by the fact that on the arbor that carried the two saws that cut the tongue of the cleat the saws had to cut twice the material away from the cleat as the saw that cut the groove on the opposite end of the cleat and the tendency was for the two saws to push the cleat endways into the saw that cut the groove and leave the cleat with a short tongue and a deep groove.

To remedy the trouble in the first machine which I have just described, there were guides placed on this machine to hold the cleat material from varying endways. The guide on the tongue end of the cleat was fastened to the channel and projected from just rear of the trim saws between and past the saws that cut the tongue of the cleat and the guide at the groove end of the cleat was fastened to the channel

of the machine and reached from just back of the trim saw under the grooving saw and beyond a short distance. The effects of those guides was that they absolutely held the cleat material from shifting endwise in the tonguing and grooving operation of the cleats. That would make the tongues exactly the desired length and the grooves of the cleats the desired depth.

The manufacturer of that machine as I originally installed it was the Chase Turbine Manufacturing Company of Orange, Mass. I made the guides for that machine I have referred to and I applied them to that machine.

Q. 35. To what extent did you observe the effect of those guides and the cutting of cleats upon the machine after the guides were applied?

A. Well, I have been from that time to this continually [fol. 990] watching and servicing and instructing as to the method of making wirebound machines and all from that time on the machines that I saw and the machines that are used today in the manufacture of cleats made by the Chase Turbine Manufacturing Company use these guides.

I cannot give you the date that I applied those guides to that cleat cutting machine and put the machine so equipped into successful operation; I know it was prior to 1915, but I wouldn't undertake to give it.

As I positioned those cleat guides on that cleat cutting machine at the Van Camp Company, prior to 1915, the guides were spaced apart the over-all length of the cleat, plus a working clearance. A working clearance is designated by all mechanics by approximately 15 1000ths of an inch, which is about 1/64th of an inch. So that the maximum possible variation in the length of the cleat tongue or the depth of the cleat groove upon that cleat cutting machine equipped with those guides was about 1/64th inch. The effect of that maximum possible variation of 1/64th of an inch upon the assembly of the cleats for making a wirebound box blank, and upon the blank itself, and upon the finished box, could not be noticed, either in the assembly of the cleats or in the blank or in the finished box. It wouldn't make a particle of difference in the box blank if the cleats cut on that machine, equipped with the guides, were positioned or fed by blocks engaging the shoulders of the cleats or an extreme end of the cleats.

Q. 41. What, if anything, do you know about machines made by the Chase Turbine Manufacturing Company subsequent to your equipping that first machine with the guide?

A. We had other troubles with that machine at Van Camps relative to the drive, to the quarter turn belts. That we also remedied but the Van Camp Packing Company called a representative at that time from the Chase Turbine Mfg. Company at Orange, Mass., and he called on me at the Van Camp Packing Company, and made sketches of the changes that I had made. From then on until now I have never seen a machine shipped from the Chase Turbine people which didn't incorporate those two changes by placing guides on the machine and also lengthening the drive belt.

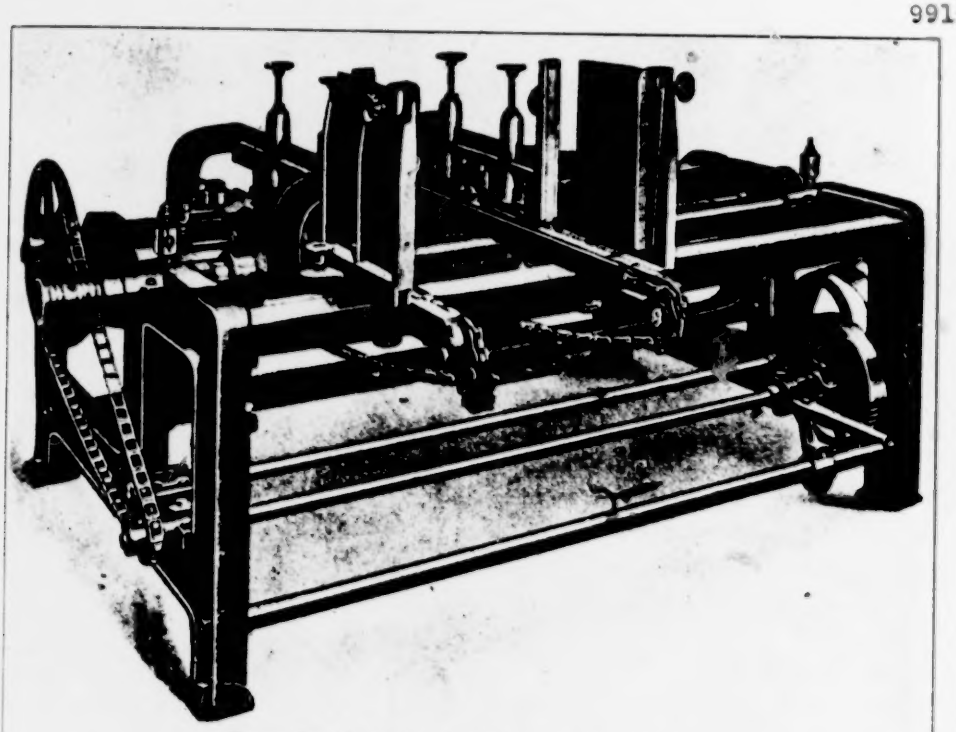
Q. 42. What opportunities have you had to know the construction of these cleat cutting machines put in use by the Chase Turbine Manufacturing Company since the time you added the guides to the machine at the Van Camp factory? [fol. 991] A. A great many of our licensees have their plant equipped with Chase turbine machines that were made since the machine that was made that I installed at the Van Camp Packing Company, and I have been continually calling on these different licensees and inspecting the method and quality and instructing the building of wirebound boxes.

The most recent occasion when I saw one of these Chase cleat cutting machines in operation was September 7, 1926, at Rathborne, Hair & Ridgeway's box plant at Chicago,—licensees of the plaintiffs. That machine which I saw on September 7, was identically the same in its essentials as the machine which I myself equipped with guides at the Van Camp Company plant prior to 1915, after the Van Camp machine had been equipped with guides and a different drive.

I can and do produce a drawing illustrating that Chase machine which I saw yesterday.

By Mr. Janney: The drawing produced by the witness and which bears the title "Plaintiffs' Drawing of Chase Turbine Mfg. Co. Cleat Cutting Machine," is offered in evidence as Plaintiffs' Exhibit No. 36.

Mr. Victor Siljander made this drawing under my direction. Mr. Siljander was with me when I observed the ope-



Chase Double End Cleat Tenoner No. 221

(Page 2)

DOUBLE END CLEAT TENONER

A MACHINE *designed particularly* to meet the requirements of the Wirebound and Cleated Panel End Box Manufacturers.

Frame. Built up strong and rigid, with heavy castings to withstand hard usage. Arbor boxes are cast in the frame.

Range. Machine is built in three standard sizes, 24 inch, 36 inch and 48 inch. Stock down to 3 inches in length between cuts may be worked.

Feed. Two speeds. Slow—20 lineal feet per minute. Fast—31 lineal feet per minute.

Cutter Heads. Are of the *inserted point design*, fitted with straight bevel points, which hold their size, and cut free and clean in all grades of stock. We furnish 150 extra points with each set of three cutters, which allows the *replacement of the points* in each cutter, eight times. Both heads are mounted on vertical spindles, which run on ball bearings immersed in oil. Cutters furnished with the machine, are for cutting 1-4 inch tongue and groove, unless otherwise specified.

Countershaft. *Entirely separate* and supported by heavy floor stands.

Trimming Saws. Each machine is fitted with two trimming saws, which are hung on a long arbor in front of the cutter heads, to trim the stock to exact uniform lengths. *One chainway, spindle with cutter head, and one trimming saw, are all in one unit*, and moved by means of a screw, with a hand wheel on the right of machine. *This feature allows the operator to change from one length cleat to another, without having to stop the machine*, saving considerable time, and increasing the capacity of the machine.

Feed and Feeding Chains. Stock is piled up in hopper, and the lugs on the feeding chains pick it out from the bottom. If narrow cleat width stock is to be handled, the hopper can be quickly removed. The *chains are composed entirely of steel*, insuring long wear, and great strength. Hold-down device will handle stock in *random widths* up to 12 inches, or in *narrow cleat widths*, equally as well.

Machine	Floor Space
No. 221	5 x 7 ft.

Countershaft
Size of T. and L. Pulleys 12 x 8 Inches
Speed 1000 R. P. M.

Speed of Cutter heads	Shipping Weight
3000 R. P. M.	3250 lbs.

(Page 3)

PLAINTIFFS' EXHIBIT NO. 37.

ration of that Chase machine shown in this drawing, on September 7, 1926.

I can and do produce a catalogue of the Chase Turbine Manufacturing Company which illustrates this cleat cutting machine.

Page 2 of this catalogue shows an illustrative cut of this machine that we have been talking about. The description on page 3 of this catalogue accurately describes the cleat cutting machine that we have been talking about.

By Mr. Janney: The catalogue produced by the witness and bearing the cover title "Chase Turbine Mfg. Co. Double End Cleat Tenoner Gang Rip Saw Machine; Orange, Mass., U. S. A.," is offered in evidence as Plaintiffs' Exhibit No. 37.

(Here follows Plaintiffs' Exhibit No. 37, side folios 991½)

In that drawing on page 2 of the catalogue, Plaintiffs' Exhibit No. 37, the cleats move from the part nearest the observer toward the back of the illustration, that is generally from right to left.

That machine shown in the drawing, Plaintiffs' Exhibit 36, and the catalogue, Plaintiffs' Exhibit 37, is just the [fol. 992] same as the machine which I saw on September 7, at the plant of plaintiffs' licensee Rathborne, Hair & Ridgeway.

In my earlier testimony, I said that I had visited the plant of Maxwell Brothers, Incorporated, a licensee of the defendant in this suit. I observed a cleat cutting machine in use at that time and the cleat cutting machine was the same as shown in this catalogue on page 2 (witness refers to Plaintiffs' Exhibit No. 37). It was some time about the middle of May, 1926, that I saw that cleat cutting machine at the Maxwell Brothers' plant. That machine which I saw at Maxwell Brothers was identically the same as that shown in the drawing Plaintiffs' Exhibit 36, as far as this drawing is complete. The machine which I saw at Maxwell Brothers was just the same as the cleat cutting machine which I saw on September 7 at the plant of plaintiffs' licensee, with the exception there might be a few minor changes on the machine at Maxwell's over and above what was on the machine at Rathborne, Hair & Ridgeway's. By minor changes I

mean that on the newer machine made by the Chase Turbine people the pressure bars were longer than on the machine which I saw September 7 at Rathborne, Hair & Ridgeway's.

Referring to plaintiffs' drawing of the Chase machine, Plaintiffs' Exhibit No. 36, Fig. 1 of this drawing is a plan view of the channels and saws and guides of the Chase Turbine machine. Fig. 2 is a longitudinal section on the line 2—2 of Fig. 1 showing the saws, one channel, feed chains and the pressure bar. Fig. 3 is a section on the line 3—3 of Fig. 2. In these drawings the part colored yellow which I have marked "5" is cleat material. The form of that material as here illustrated is a block cut from the end of a board cut the length of the finished cleat plus $\frac{1}{4}$ inch. In manufacturing cleats as shown in this drawing the tongues and grooves are cut on the block the full width of the board and the cleats are ripped to their desired thickness after the tongues and grooves are cut.

(Here follows Plaintiffs' Exhibit No. 36, side folio 992½)

These blocks marked "6" and "7" shown in Figs. 1 and 2 of Plaintiffs' Exhibit 36 are lugs on the feed chains that feed the boards through the cleat machine. This arrow 8 designates the travel of the feed chains. The feed chains and the board 5, pushed by the lugs 6 and 7, travel in the direction indicated by the arrow 8 during the operation of the machine. These parts travel by continuous motion.

Q. 71. I notice a dimension in Figure 1 of Plaintiffs' Exhibit No. 36, of $8\frac{1}{4}$ in. indicating the length of the board [fol. 993] 5. What length of cleat is supposed to be made upon this machine starting with this board $8\frac{1}{4}$ in. long?

A. In the manufacture of all cleats of our licensees they always cut the board longer than the desired length of the cleat in order so when the board passes through the trim saws it will cut the cleats to the desired lengths, therefore, in this drawing I asked Mr. Siljander to make the drawing showing the finished cleat to be 8 inch and the board marked 5 to be $8\frac{1}{4}$ in. which is the practice carried out by the licensee.

These two parts colored blue and marked in pencil 9 and 10 are the trim saws. They are mounted on an arbor and adjusted apart the exact width of the length of the cleats desired. In this drawing and in order to make the assumed cleat 8 inches in length, the distance between the

PLAINTIFFS' DRAWING OF CHASE TURBINE MFG. CO. CLEAT CUTTING MACHINE

FIG. 1

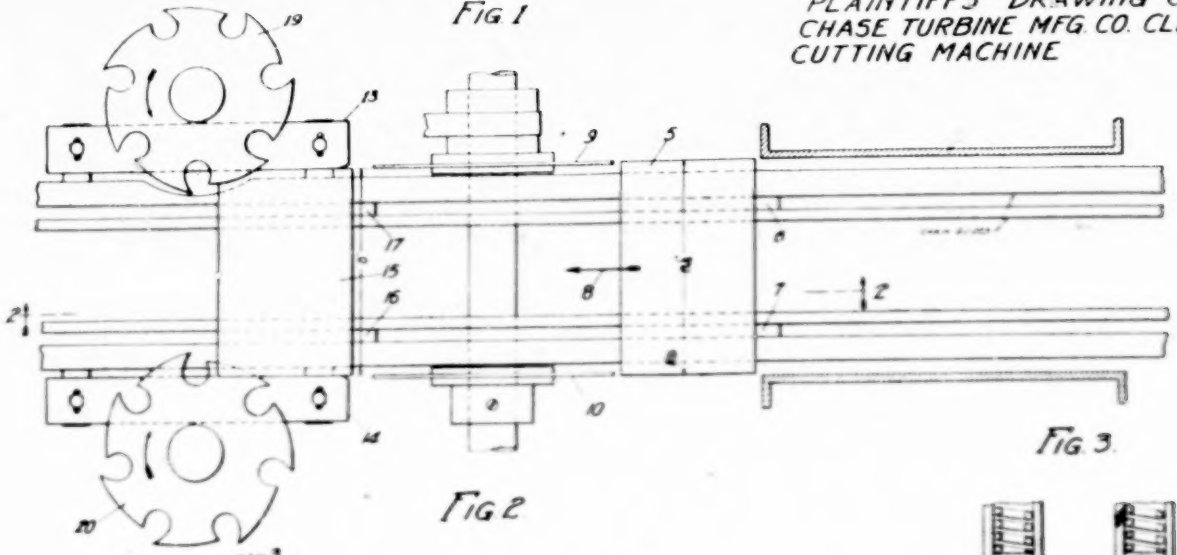


FIG. 2

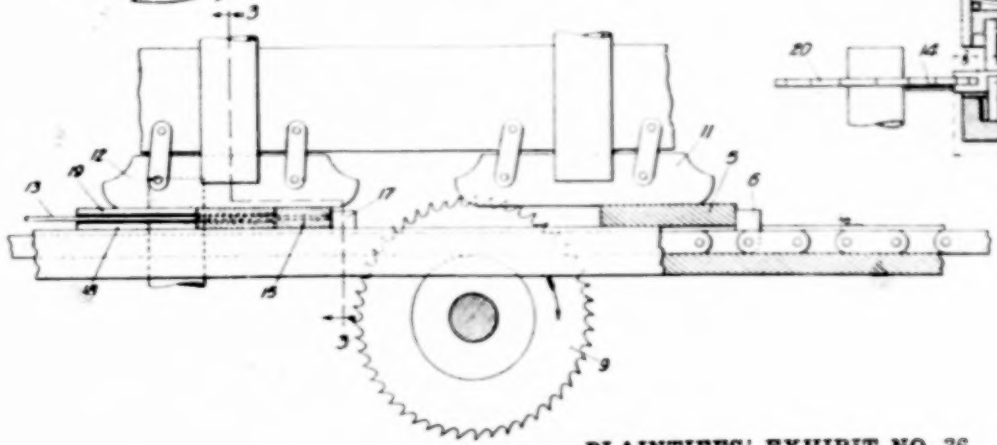
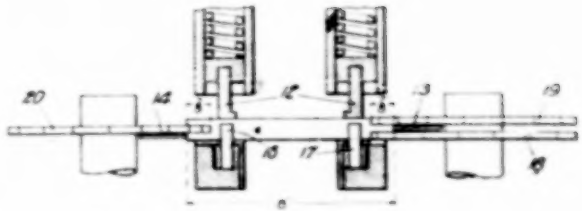


FIG. 3.



PLAINTIFFS' EXHIBIT NO. 36.

adjacent faces of these two trim saws 9 and 10 is 8 inches. When those saws have been adjusted 8 inches apart, they are fixed in relation to each other.

These parts "11" and "12" show in Figs. 2 and 3 are presser feet under which the boards of cleat material are pushed by the lugs 7, the function of the presser feet being to hold down the boards in proper position to receive the cutting actions of the saws. For this purpose each presser foot is pressed downwardly by a strong spring as shown in Fig. 3.

The parts colored in red and marked "13" and "14" in Figs. 1, 2 and 3, are the guides, like those that I applied to the Van Camp machine, as I have already described, which guides hold the cleat board against endwise movement during the tonguing and grooving operation. To suit the assumed cleats 8 inches long, those guides 13 and 14 are spaced apart the same distance as the trim saws, which, in Fig. 1, is 8 inches. This yellow thing marked "15" shown between the two red guides 13 and 14 is a cleat board.

These pieces 16 and 17 are lugs on the feed chain that feeds the cleat boards through the machine.

These parts colored blue and marked "18" and "19" in Fig. 2 and shown at 18 in Fig. 1, and also marked "18" and "19" at the right-hand side of Fig. 3, are the saws that cut the tongue of the cleat.

The part colored in blue and marked "20" in Figs. 1 and 3 is the saw that cuts the grooves of the cleats.

With this machine shown in Plaintiffs' Exhibit 36, which is like both the machines which I saw at the plant of plaintiffs' licensee and the plant of defendant's licensee, there is no opportunity to cut the tongue shorter or longer, or the [fol. 994] grooves deeper or shallower than intended, when the cleat board passes between guides 13 and 14.

Q. 84. In how many wirebound box making plants in the United States have you observed cleat cutting operations for making tongue and groove cleats?

A. In all of the plaintiffs' licensees' plants, I will say more than sixty in number.

Q. 85. And how many times have you observed those cleat cutting operations for making tongue and groove cleats?

A. It has been my practice to visit each and every one of these plants at least once a year and many of them two, three and four times a year.

That has been my practice from the time that the first tongue and groove cleats were used in the wirebound box industry, up until now, and they began prior to 1915.

As I have observed those cleat cutting operations, and the handling of tongue and groove cleats, the cleat feeder at a wirebound box-blank machine does not receive any cleats having tongues longer or shorter than they should be, unless the cleat machine has been improperly adjusted, which is quickly remedied.

Q. 88. What, then, is the practical importance in the wirebound box industry of inaccuracies or variations in the lengths of cleat tongues as referred to by Mr. McElroy?

A. There isn't any, they don't vary in length enough to make any difference.

As a practical proposition, there is absolutely not any possibility that inaccuracies or variations in the lengths of cleat tongues might interfere with the production of properly dimensioned boxes.

Q. 90. Now Mr. McElroy says:

"It is the position of the shoulders on the side sheets which determines whether or not the box is properly constructed and not the position of the ends of the tongues, and by properly positioning the pushers to engage the shoulders, the desired accuracy of the construction of the box is secured regardless of inaccuracies or variations in the overall length of the cleats, for if the shoulders are properly positioned in the box blank assembly, or in the preliminary blank, the desired accuracy for the ultimate box will be insured."

State whether or not this testimony by Mr. McElroy is true?

A. It is not true. In the first place, cleats do not vary [fol. 995] in length in practical manufacture enough to make any difference in the manufacture of the box blank, but if they should vary in length, as Mr. McElroy has stated, your finished box or blank would be just as perfect when made by being positioned by the extreme end of the cleat as it would being positioned by the shoulder of the cleat.

If the length of the cleat were such as to produce an imperfection in the blank or the finished box if the cleat were

fed by a block at the extreme edge of the cleat, the imperfection would absolutely not be cured if you fed the cleat by a block engaging the shoulder.

Q. 92. What opportunities, if any, have you had of observing the method of feeding the cleats groove end foremost, by blocks which engage the cleat shoulders respectively, but do not engage the extreme ends of the tongues?

A. Since first using tongue and groove cleats in the wirebound box industry, from that time until now, the present date, we have and are making boxes positioning the cleats from the shoulder of the cleat. We position cleats the groove end of the cleats leading under the stapling point and are positioned by a space block against the shoulder on the tongue end of the cleat.

I have myself observed this method of feeding cleats at each and everyone of plaintiffs' licensees' plants, and as I have stated before, I visited these plants from one to four times a year. When the plaintiffs' licensees changed from the step-miter cleat to using the tongue and groove cleat it was my job to order shipped from our plant blocks suitable to position tongue and groove cleats and for me to install and instruct the method of using these space blocks and at that time all of our licensees were instructed to feed the cleats in the chains, grooves foremost, and position the cleats against the shoulders of the tongues of the cleats.

As soon as the tongue and groove cleats came into use nearly every licensee of the plaintiffs began to use tongue and groove cleats, or at least as rapidly as they could get the machinery and equipment to make and use tongue and groove cleats, and in every instance they fed the groove of the cleats foremost under the stapling point and the cleats were positioned by the shoulders of the cleat. In practicing that method of positioning and feeding the cleats by their shoulders, there was nothing provided on the blocks or otherwise to engage the cleats at the extreme rear ends of the tongues.

It was certainly prior to 1915 that a substantial number of plaintiffs' licensees were following this practice of feed- [fol. 996] ing cleats grooves foremost and with blocks engaging against the shoulders of the tongues and with nothing engaging the extreme ends of tongues.

In the making of wirebound box blanks by plaintiffs' licensees there was a change made from the method I have

described of feeding cleats grooves foremost and with the cleats positioned with their shoulders against blocks at the rear thereof. We now feed cleats with the cleats positioned against blocks at the rear end of the cleats, and the cleat is fed tongue foremost through the machine. The majority of plaintiffs' licensees changed to feeding the tongues of the cleats foremost through the machines, but at least one of the licensees feeds the cleats with the grooves foremost through the machine. This one licensee feeds his cleats through the machine as he was instructed at first, by feeding the cleats groove foremost, the cleats being positioned with a block against the shoulders at the rear end of the cleat and no block between the extreme ends of the tongue of the cleat.

I can and do produce a drawing showing diagrammatically plaintiffs' earlier method of feeding cleats by the shoulder engagement and also showing the later method of feeding cleats tongue foremost.

By Mr. Cox: Defendant's counsel does not wish to restrict the scope of the testimony unduly and in fact welcomes any and all information that may be of value to the court in determining the issues but the present session is called for the purpose of rebutting the affidavit of Mr. McElroy, and it is not evident to defendant's counsel what, if any, bearing the present line of testimony has upon any of the statements made by Mr. McElroy. Up to the present defendant's counsel has assumed that the questions were intended to bring out the qualifications of this witness as an expert in the art, but it is now evident that plaintiffs' counsel has more than this in view. Objection is therefore made that this line of questioning as to matters not shown nor suggested in plaintiffs' patents and apparently having no bearing on the statements in Mr. McElroy's affidavit, is out of order, is not relevant and is improper rebuttal.

By Mr. Janney: The proofs now being made by this witness are strictly pertinent rebuttal. If it is not already apparent it will be so in the further development of the testimony, that these proofs produce a two-fold result. Defendant's expert McElroy, in an attempt to formulate some distinction between defendant's third machine and [fol. 997] the patents in suit, has advanced the theory that

there is some differentiation to be found in the circumstance that defendant's third machine and method position and feed the cleats by means of blocks which engage the shoulders of the cleats instead of the extreme ends of the cleats; and Mr. McElroy ascribes various advantages to this way of feeding and positioning cleats by their shoulders, saying, for instance, that the feeding of cleats by the shoulders instead of by the ends of the tongues avoids any trouble in the positioning of the cleats even if the tongues have been made of greater or less length that intended. The first result of the present proofs is to show that Mr. McElroy's theories are entirely erroneous, that he is not at all qualified to attempt the alleged differentiation of defendant's machine because he patently misunderstands his subject, and that he is wholly discredited as an expert because he has overlooked or has ignored or has misrepresented the facts as to the universal accuracy of cleat cutting and the absolutely negligible importance in this case of the positioning of cleats by their shoulders instead of by their extreme ends.

The second necessary result of these proofs is to rebut conclusively the impression which Mr. McElroy attempted to create that there was some novel, advantageous and distinctive concept involved in defendant's third method and machine in that they feed the cleats by the shoulders instead of their extreme ends. Mr. McElroy's testimony for defendant argues a pretended differentiation of defendant's machine based upon this idea of feeding the cleats by their shoulders. The present proofs have already begun to establish and in the end will completely establish that many years before defendant entered the field, plaintiffs had employed the positioning block at the rear ends of the cleat to engage the cleat shoulders without engaging at all the ends of the tongues; that this method of feeding was followed for several years by nearly all of plaintiffs' licensees. In fact, the idea of feeding the cleats by their shoulders and with their grooves foremost, with whatever advantages are derivable therefrom, was simply plaintiffs' own development in detail upon the foundation of the Inwood & Lavenberg invention of the patents in suit. In other words, the relevancy of the present proofs

rests largely upon the circumstance that Mr. McElroy's as-
[fol. 998] serted theories do not differentiate defendant's third machine, but do demonstrate that defendant's third machine and method embody a further appropriation by defendant of a practice long previously successfully developed by plaintiffs in the use of the inventions of the patents in suit.

By Mr. Cox: Notwithstanding the statement of plaintiffs' counsel, it would seem as if the chief purpose of the testimony now being adduced is to discredit or invalidate the patents under which the defendant is operating particularly Craig patent 1,565,909 covering, among other things, the idea of feeding the cleats from the shoulders. This is not the time nor the place to determine the validity or invalidity of defendant's patents. Furthermore, it is peculiar to say the least, for plaintiffs to allege that defendant is appropriating an idea of plaintiffs' when the defendant has the patent and as far as known to defendant's counsel, plaintiffs never even attempted to patent the ideas which have been patented by defendant. Consequently, the original objection is repeated.

By Mr. Janney: It is a fact that an incidental effect of the present line of proof will be to invalidate, by complete anticipation, the principal aspects of defendant's Craig patent No. 1,565,909. For example, plaintiffs' "shoulder feeding" practice completely anticipated the machine claim 1 of that Craig patent and the method claim 8 thereof, as well, probably, as others. Although that is one of the effects of the present line of proofs, it is not the principal and here pertinent effect which is, as plaintiffs' counsel has already stated, to discredit both Mr. McElroy and his theories of differentiation of defendant's machine.

The circumstance that defendant has procured a patent upon this "shoulder feeding" idea is due to the circumstance that the above mentioned Craig patent, as disclosed in its specification, is founded upon an absolutely erroneous and fictitious theory of utility and novelty, one which plaintiffs have never advanced and would never advance for the sake of obtaining a patent or otherwise.

The Witness: Mr. Siljander made this drawing I now produce under my direction.

By Mr. Janney: This drawing produced by the witness and bearing the title "Plaintiffs' Drawing Illustrating

PLAINTIFFS' DRAWING ILLUSTRATING
ALTERNATIVE USE OF POSITIONING BLOCKS TO
ENGAGE CLEAT SHOULDERS OR CLEAT ENDS

Fig. 2.

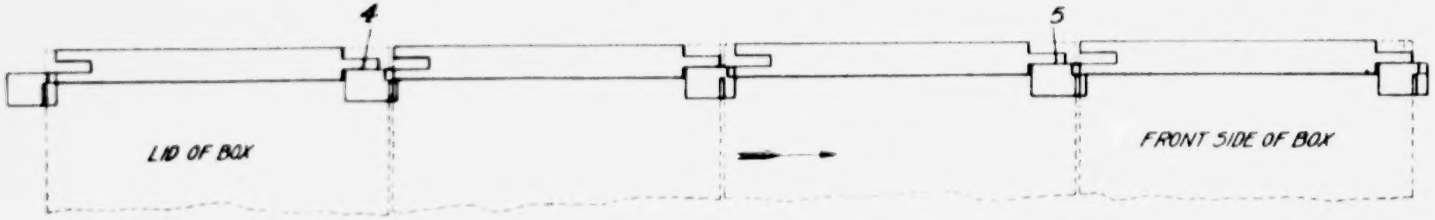
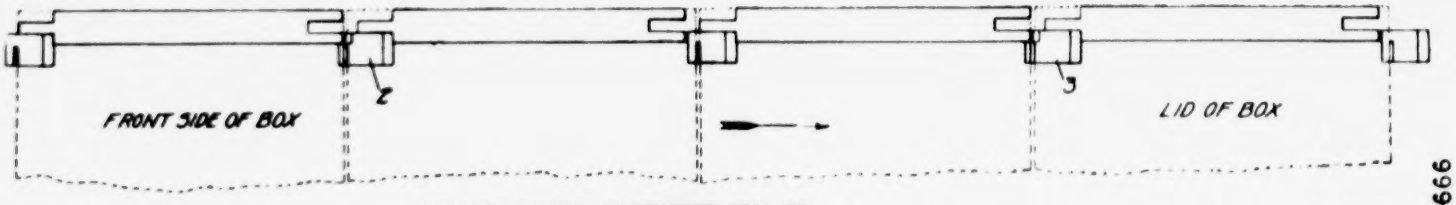


Fig. 1



PLAINTIFFS' EXHIBIT NO. 38.

3666

[fol. 999] Alternative Use of Positioning Blocks to Engage Cleat Shoulders or Cleat Ends" is offered in evidence as Plaintiffs' Exhibit No. 38.

(Here follows Plaintiffs' Exhibit No. 38, side folio 999½.)

In Plaintiffs Exhibit No. 38, Fig. 1 shows a line of cleats fed through the machine by the groove end of the cleats leading under the stapling point and positioned by space blocks at the shoulder of the cleat at the rear ends of the cleats. Fig. 2 shows a line of cleats as fed through the machine, with the tongue ends of the cleats leading under the stapling point and positioned by space blocks at the rear ends of the cleats. The things shown in brown in both figures of Plaintiffs' Exhibit No. 38 are the cleats; the things shown in red are the space blocks. The arrows in Figs. 1 and 2 indicate direction of movement of the cleats and blocks as they travel under the stapling head. In Plaintiffs' Exhibit No. 38, the parts indicated by the black dash lines represent the outlines of the side sheet as they were assembled on the cleats.

I can and do produce a sample block illustrative of those blocks shown in red in Fig. 1 of Plaintiffs' Exhibit No. 38. I have marked on Fig. 1 the blocks 2 and 3 which are exactly like the sample which I have produced.

By Mr. Janney: The sample block just produced by the witness is offered in evidence as Plaintiffs' Exhibit No. 39, and to have the title "Sample of Plaintiffs' Shoulder-Engaging Block."

I produce a sample block illustrative of those shown in red in Fig. 2 of Plaintiffs' Exhibit No. 38. This block is not exactly like the block shown in Fig. 2, but it is a companion block for some of those shown in Fig. 2. While the red blocks of Fig. 2 are left-hand blocks for the left-hand chain of the machine, the block which I have produced is a right-hand block to go on the right-hand chain of the machine. In other words, this sample block would be the companion block to the ones which I have marked with the numbers 4 and 5 in Plaintiffs' Exhibit No. 38. I do not happen to have at hand one of the left-hand blocks.

By Mr. Janney: The sample block just produced by the witness is offered in evidence as Plaintiffs' Exhibit No. 40,

with the title "Plaintiffs' Cleat-Positioning Block for Engaging Extreme End of Cleat."

By Mr. Cox: This line of testimony is still considered as objectionable for the reason stated and plaintiffs' counsel is asked whether it may be understood that the objection [fol. 1000] will stand as to this line of testimony without being repeated after each question.

By Mr. Janney: I agree that the objections of defendant's counsel already stated may be understood as repeated for this entire line of testimony, without actual repetition thereof on the record.

This arrangement of Fig. 1 of Plaintiffs' Exhibit No. 38 employing the blocks like Plaintiffs' Exhibit 39, was first used commercially by a substantial number of plaintiffs' licensees when the industry began to use tongue and groove cleats, sometime prior to 1915. I don't know that I can give the date that some of plaintiffs' licensees, as I have already described, began to use commercially the arrangement shown in Fig. 2 of Plaintiffs' Exhibit 38; it has been at least 8 or 10 years.

There wasn't any virtue in the manner of positioning and feeding cleats shown in Fig. 1 of Plaintiffs' Exhibit 38, that is, feeding them by their shoulder instead of by the extreme rear ends of the tongues. We employed blocks which would engage the cleat shoulders instead of having the blocks formed with narrow fingers that projected across the extreme ends of the cleat tongue, simply because this was the easier and cheapest way that our engineers knew of to make space blocks to position the cleats, as they were made from one block of steel with the least possible amount of machining and with the least possible amount of projection from any side.

I have said that one of plaintiffs' licensees, at least, had continued to position and feed cleats in the arrangement shown in Fig. 1 of Plaintiffs' Exhibit No. 38. The name of that licensee is the McPherson & Foster Company of Evansville, Indiana, a licensee of the plaintiff, which has fed their cleats through their machines with blocks engaging the shoulders of the cleats and the cleats fed the grooves foremost under the stapling head since they have been manufacturing wirebound boxes to my knowledge, up until February of this year, when I called on them, and I have

no reason to believe but what they are still continuing to position their cleats in the same manner today.

I have observed the operation of machines arranged according to Fig. 2 of Plaintiffs' Exhibit 38. I have noticed all the licensees in each and every one of their plants as to the method that was employed in feeding cleats since the time that the change was made from feeding cleats from [fol. 1001] the shoulders to the method of feeding from the extreme ends of the cleats.

With reference to this arrangement shown in Fig. 2 of Plaintiffs' Exhibit 38, when this change was made the manufacturers of wirebound boxes were notified by me that it would be necessary for them to buy new space blocks or return their old space blocks to our plant and have bevels cut on the opposite end of the block in order to avoid trouble in stripping the finished blank from the chain. After this being done, it was my duty to instruct the workmen and operators how to set up feed cleats properly from the extreme end of the cleat. After giving that instruction, I have watcher the efficiency of the machines arranged according to Fig. 2 in Plaintiffs' Exhibit 38 very closely and we certainly did not dare to cut down production by any change on the machine or impair the quality of the box. As regards the accuracy of the assembly of the cleats and sheets, and the accuracy of the finished blanks, and the ease of folding the blanks, and the accuracy of the relative location of parts to the finished box, there was absolutely no difference between the use of the machines arranged according to Fig. 1 and those arranged according to Fig. 2 of Plaintiffs' Exhibit 38. They were identically the same. Plaintiffs' practice was changed, at least in part, from that indicated in Fig. 1, to that indicated in Fig. 2, Plaintiffs' Exhibit 38, because at the time we made the change from feeding cleats as shown in Fig. 1 to feeding cleats as is shown in Fig. 2 of Plaintiffs' Exhibit 38, we wanted to incorporate on our machines an automatic wire cutting device to cut the wires at the proper length between blanks, and it was essential to have the groove end of the cleat at the loose end of the lid or cover and have the tongue end of the cleat on the front side of the folded box at the top edge of that side, so that in folding the lid the closing corner of the finished box, the groove of the cleat on the lid, would fold over the tongue of the cleat on the side. We

also knew that it was advisable to have the wires twisted on the side of the box down approximately ¾ inch from the closing corners of the box. It also happens that the cutting device would be much more efficient if it cut the wires shorter on the front side of the box after the box was folded and the lose wires left longer at the closing corner on the lid of the box. This would force the users of wire-bound boxes to close and make the twist on the front side of the box. This is beneficial because in making the twist on the side of the box down from the top of the box as our laboratory test shows, made this twist at least 25% [fol. 1092] stronger than it would if it had been closed or twisted on the corners of the box. Now in order to hold our cleats in the same relation to the side sheets and feed the section of the box that would become the front side of the box when folded under the stapling heads in advance of the other sections, it allowed us to use the edge of the front section as a guide to sever the wires, thus making those wires on that section shorter, so it was advisable at this time to feed the tongue of the cleats foremost and the section that would become the side of the box foremost and position the cleats by a block at the rear end of the cleat.

Q. 123. In making the change from the arrangement shown in Fig. 1 to the arrangement shown in Fig. 2 of Plaintiffs' Exhibit 38, how, if at all, were you influenced by a desire to improve the accuracy of cleat and sheet positioning and assembly?

A. I don't think there was any difference in the accuracy of the positioning of the cleats, no matter which way used, whether as in Fig. 1 or Fig. 2.

Except for the matter of wire cutting which I have recently explained, the machines arranged respectively like Figs. 1 and 2 of Plaintiffs' Exhibit 38, were mechanically equivalent. Aside from the wire cutting, the blanks made from the arrangement shown in Fig. 1 were just the same as those made with the arrangement shown in Fig. 2; you could tell no difference.

In the machines in which we fed the cleats by their shoulders as shown in Fig. 1 of Plaintiffs' Exhibit 38, the distance which we provided from the front face of the block that engaged the shoulder of the cleat to the block at the advance end of the groove end of the cleat was approximately 1/32nd of an inch more than the length of the cleat

from the shoulder of the cleat to the extreme end of the groove end of the cleat. The corresponding clearance and the arrangement shown in Fig. 2 of Plaintiffs' Exhibit 38 was just the same; approximately 1/32nd of an inch clearance.

With the arrangement shown in Fig. 1 of Plaintiffs' Exhibit 38, as to the clearance provided between the longitudinal face of the tongue of the cleat and the adjacent lateral face of the block; the chains on the plaintiffs' machines were made with 1/16 inch clearance over the thickness of the cleat, and the part of the space block that protruded inside of the chain walls was 1/4 inch thick. Now using a standard cleat which is 13/16 inch thick and the chain being 7/8 inch wide between the walls and a cleat cut with the [fol. 1003] tongue full 1/4 inch in thickness, you would have 1/32 inch clearance between the inside face of the space block and the side of the tongue.

The corresponding clearance between the side face of the tongue and the adjacent lateral face of the block in the arrangement shown in Fig. 2 of Plaintiffs' Exhibit 38 was just the same.

Referring to Plaintiffs' Exhibits 28 and 29, the stipulated drawings of defendant's machine, I didn't observe what clearance there was between the side face of the tongue and the adjacent face of the positioning block. I did not observe on defendant's machine whether or not there was any clearance between the side face of the tongue and the adjacent lateral face of the positioning block. If there was no such clearance it would affect the cleat feeder's ability in laying the cleats in the channels.

Q. 133. How would he be affected?

A. If there were no clearance he would find it difficult to place the tongues behind the face of the space block, because he would have to take extra care of each and every cleat to see that the tongues were properly placed by the side of this block, and in many instances the tongue is not in the exact center of the cleat. This may force the cleat feeder to turn the cleat over with the bottom side up. Assuming a clearance of about 1/32nd inch between the side of the tongue and the adjacent face of the positioning block in defendant's machine as shown in Exhibit 29, and assuming a clearance of about 1/32nd inch in excess of the cleat length between the spacer block of the workholder shown

in Fig. 1 of the patent in suit No. 1,128,144: The cleat feeder in assembling cleats in a workholder as shown in the patent in suit, with a space block at the rear end of the cleat can feed cleats in the channels more easily than they can in the channels on the defendant's machine as is shown in Fig. 1 of Plaintiffs' Exhibit No. 29.

The cleat feeder in feeding cleats takes a cleat in each hand and feeding the workholder channels and the space block at the rear of the cleat, he has only one forward movement to make and in feeding cleats on the defendant's as shown in Fig. 1 of Plaintiffs' Exhibit No. 29, he also has the same movement to make and still has to find the space between the outer faces of the space block and the inside face of the tongue.

Explaining the way the cleat feeder feeds the cleats with the "forward motion" I have just referred to: The cleat [fol. 1004] feeder in nearly every instance stands between the channels of the cleat guideways of the machine and takes a cleat in each hand, drops the cleat into the channels or chains, pushes them forward until the front end of the cleat strikes the block at the foremost end of the cleat.

The fact that plaintiffs' machine commonly provides a clearance of only 1 32nd inch in excess of the cleat end between one block and the next, does not in any way slow up the cleat feeding operation or affect the speed of production of the machine. Comparing the speed of production of plaintiffs' machine with the speed of production of defendant's third machine, the defendant's machines that I saw in operation were operating at a speed of approximately 140 revolutions per minute, with one exception. I saw one of their machines operating at 155 revolutions per minute, and we are operating plaintiffs' machines from 180 to 205 revolutions per minute.

This comparison of revolutions per minute, as an accurate comparison of the speeds of movement of box parts in the respective machines, depends on the distance between the staples in the blank, as to how fast the box parts move.

Q. 140. Let me put the question in this way: Generally speaking, in which case the man feeding the cleats have to act more rapidly, in feeding a machine operating at 140 to 155 revolutions per minute, or in feeding a machine operating at from 180 to 205 revolutions per minute, assuming like spacing of staples in the two instances?

A. There are two things to take into consideration in answering that question. If the staple spacing was just the same and the cleats were the same in length the cleat feeder would have more cleats to lay in the same amount of time in feeding cleats for the machine that made the most revolutions per minute.

There is not any difficulty experienced in the operation of plaintiffs' machine in feeding the cleats accurately and reliably. It is evident from Plaintiffs' Exhibit No. 29, for example, that there is a greater clearance in excess of cleat lengths between one positioning block and another than the corresponding clearance in plaintiffs' machine. That greater clearance in defendant's machine, I don't think helps in the laying of cleats in the least, because in the plaintiffs' machine you will have no trouble with the cleat feeder laying his cleats and keeping ahead of the sheet feeders, and cut the production of the blank machine by [fol. 1005] not getting his cleats in the chains at the proper time.

Q. 143. Returning to what defendant's expert McElroy said in his most recent testimony in this case. He stated:

"It is the position of the shoulders on the side sheets which determines whether or not the box is properly constructed and not the position of the ends of the tongues, and by properly positioning the pushers to engage the shoulders, the desired accuracy of the construction of the box is secured * * *"

Is this statement true or not?

A. This statement is not true.

I have testified, referring to the drawings, Plaintiffs' Exhibit No. 36, that the red guides 13 and 14 so prevent longitudinal movement of the cleat material during the tonguing and grooving operation as to prohibit absolutely any material variation of the lengths of tongues and the depths of grooves. Supposing now that these guides were removed or improperly adjusted so that they would not confine the cleat material against endwise movement, if the cutting occurred so as to produce tongues longer than intended, the effect upon the groove would be that the groove would be shallower than was intended, to the same extent that the tongue of the cleat was longer; and if the cutting under the assumed condition were such as to cut the tongue shorter

than intended, the effect upon the groove would be that the groove would be cut deeper than it was intended, the same depth as the shortness of the tongue. The standard length of the cleat tongue and the standard depth of the cleat grove is $\frac{7}{8}$ inch. Then, for example, assuming that the faulty cutting although intended to produce the standard cleat, cut a tongue that was $\frac{1}{4}$ inch short, that is, only $\frac{5}{8}$ inch long, the depth of the groove cut thereby would be $1\frac{1}{8}$ inch and if the tongue were cut $\frac{1}{4}$ inch too long, that is, if the tongue were made $1\frac{1}{8}$ inch long, the corresponding grove would be $\frac{5}{8}$ inch deep. The conclusion follows that the distance of cleat length between the cleat shoulder and the bottom of the groove is a constant in such a cleat cutting machine as that shown in Plaintiffs' Exhibit No. 36. No cleat cutting machine for cutting tongues and grooves that I ever saw was different in that respect from this one.

I have already testified that there is no practical possibility of a material variation in the over-all length of cleats cut upon the machine shown in Plaintiffs' Exhibit [fol. 1096] No. 36. I have not known any cleat cutting machine in which that was not true.

Q. 152. I want then to have you assume the occurance of cleat tongues and grooves improperly cut, in spite of the fact that you have testified that there is no practical possibility of this occurring in ordinary commercial operations, and to explain just what would happen if these improperly cut cleats were attempted to be used upon defendant's third machine, as shown in Plaintiffs' Exhibits Nos. 28 and 29.

First, assume that cleats have been cut with their tongues $\frac{1}{4}$ inch shorter than intended. That is, starting with a cleat 8 inch in over all length and intended to be a standard cleat, the tongue, instead of being the standard length of $\frac{7}{8}$ inch is only $\frac{5}{8}$ inch long, while the groove, as you have testified, would be $1\frac{1}{8}$ inch deep. Can you produce a drawing illustrating the effect of employing such cleats upon defendant's third machine, as shown in Plaintiffs' Exhibits 28 and 29?

A. I can and do.

Mr. Siljander prepared this drawing under my instructions.

By Mr. Janney: The drawing just produced by the witness is offered in evidence as Plaintiffs' Exhibit No. 41.

FIG. 1

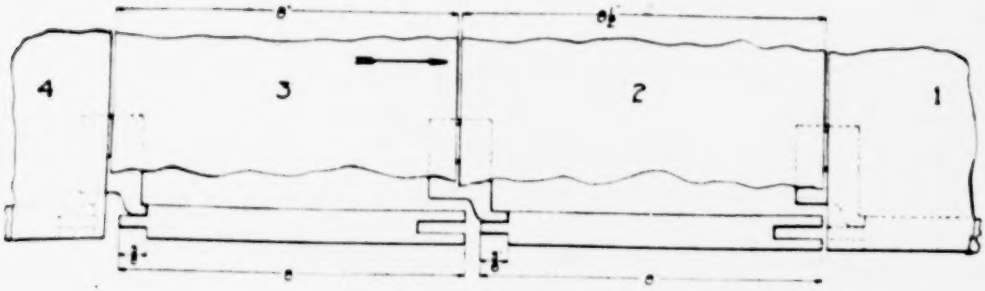


FIG. 2

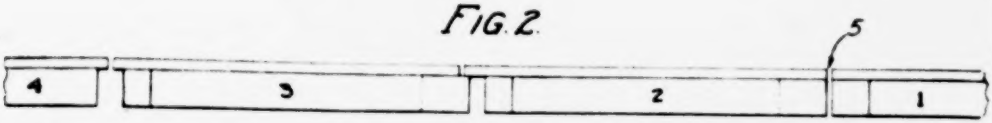
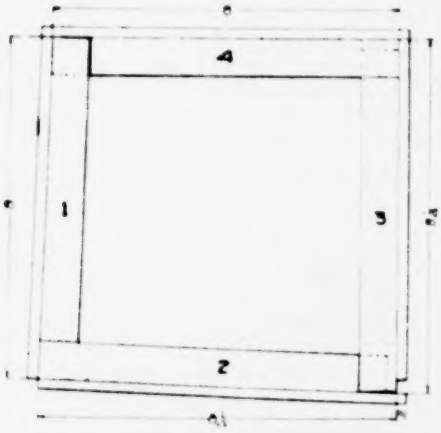


FIG. 3



PLAINTIFFS' DRAWING ILLUSTRATING USE IN DEFENDANT'S THIRD MACHINE OF CLEATS HAVING TONGUES ¼ INCH SHORTER THAN INTENDED

PLAINTIFFS' EXHIBIT NO. 41.

By Mr. Cox: Objected to as incompetent and irrelevant.

By Mr. Janney: The effect of this drawing and the testimony relating to it is flatly to contradict defendant's expert, Mr. McElroy, in certain of his unequivocable assertions, to show either that he is ignorant of or has misrepresented the facts.

(Here follows Plaintiffs' Exhibit No. 41, side folio 1006½.)

In Plaintiffs' Exhibit No. 41 the parts colored in brown are cleats. The parts colored yellow are sheet material. The parts colored red are space blocks as used on defendant's machine. The construction and arrangement of these red space blocks in Plaintiffs' Exhibit 41 is just the same as the construction and arrangement of the blocks as I observed them upon defendant's third machine, as they are shown in the stipulated drawing, Plaintiffs' Exhibits 28 and 29. Fig. 1 in Plaintiffs' Exhibit No. 41 shows a plan view of the row of cleats positioned by space blocks and also the side sheets of those sections. Fig. 2 is a side elevation of the same row of cleats and side sheets. The relationship of cleats and sheets shown in Fig. 2 is just the same as the relationship of cleats and sheets determined by the positioning [fol. 1007] blocks engaging the cleat shoulders as shown in Fig. 1. Fig. 3 of Plaintiffs' Exhibit 41 is the end view of the box folded into box form. The arrangement of cleats and sheets for the individual section as shown in Fig. 3 is just the same as the arrangement shown in Figs. 1 and 2. I mean that if the blank diagrammed in Fig. 2 were wired and folded it would result identically in the disposition of the box parts as shown in Fig. 3. The dimensions inscribed upon Plaintiffs' Exhibit 41 are accurate, on the drawing is full size.

As to sections 1 and 4 of the diagrammed blank in Plaintiffs' Exhibit 41 the cleats of those sections are shown as having tongues and grooves of the standard correct depth and length. Cleats of sections 2 and 3, throughout the figure of Plaintiffs' Exhibit 41, are shown as each having its tongue $\frac{1}{4}$ inch shorter and its groove $\frac{1}{4}$ inch deeper than the intended standard dimension. Figs. 2 and 3 of Plaintiffs' Exhibit 41 truly and accurately represent the effects which would be produced by attempting to use upon defendant's third machine the defective cleats shown in Fig. 1.

If binding wires were stapled on the blank shown in Fig. 2, it would be impossible to fold the blank into box form without breaking the wire at the corner between sections 1 and 2, which is indicated by the arrow 5, because the cleats of the second section are not properly positioned and the groove end of the cleats of the second section is too close to the tongue end of the cleats of the first section. The box diagram in Fig. 3 would not be a salable and usable box. It would be counted as defective.

Supposing that instead of having the imperfect cleats positioned by blocks engaging their shoulders, as shown in Plaintiffs' Exhibit No. 41, they were used on plaintiffs' machines illustrated in Plaintiffs' Exhibit No. 38, in Fig. 2, the result would be they could not be used on plaintiffs' machine, as illustrated in plaintiffs' machine Plaintiffs' Exhibit No. 38, because with the cleats that are cut with their tongues $\frac{1}{4}$ inch shorter than intended, the distance from the shoulder of the cleat to the extreme groove end of the cleat is too long to be placed between the blocks in plaintiffs' machine as shown in Plaintiffs' Exhibit No. 38.

The defective box diagrammed in Fig. 3 of Plaintiffs' Exhibit 41 could not be made from a blank produced by the machine illustrated in Fig. 2 of Plaintiffs' Exhibit 38.

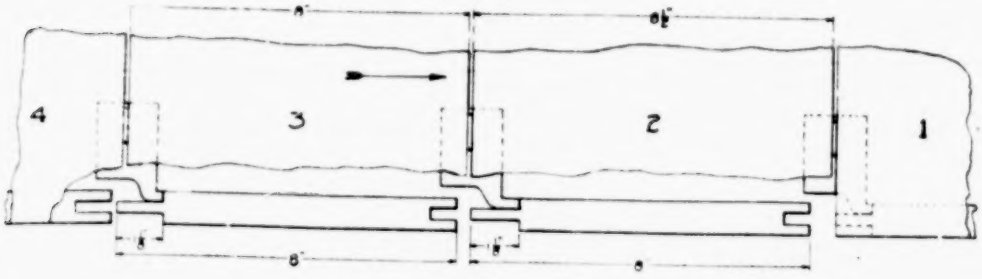
I can and do produce a drawing diagramming the use upon defendant's third machine of cleats in which the tongues have been cut $\frac{1}{4}$ inch too long and the grooves have been cut as I have testified they would be $\frac{1}{4}$ inch too shal- [fol. 1008] low. Mr. Siljander prepared this drawing under my direction.

By Mr. Janney: The drawing produced by the witness is offered in evidence as Plaintiffs' Exhibit 42.

(Here follows Plaintiffs' Exhibit No. 42, side folio 1008½.)

The color scheme of this Exhibit 42 is the same as that of Exhibit 41. And the arrangement of the figures and the numbering of the sections is the same as that of Exhibit 41. The dimensions given on Exhibit 42 are correct and accurate. Figs. 2 and 3 of Exhibit 42 truly and accurately represent the results of feeding the imperfect cleats represented in Fig. 1 upon defendant's third machine as I observed it. In Plaintiffs' Exhibit 42, Fig. 2, if this blank

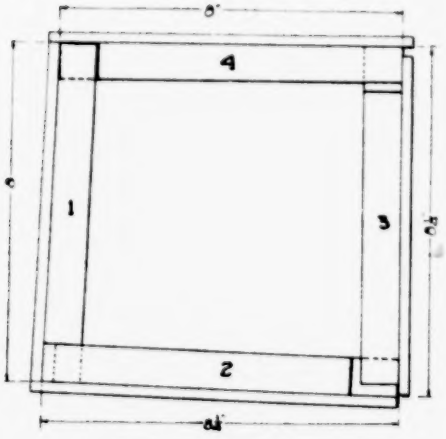
FIG. 1.



5

FIG 2.

FIG. 3.



PLAINTIFFS' DRAWING ILLUSTRATING USE IN DEFENDANTS THIRD MACHINE OF CLEATS HAVING TONGUES ¼ INCH LONGER THAN INTENDED

PLAINTIFFS' EXHIBIT NO. 42.

were properly wired, it could not be folded and keep the wire intact. The wire would break at the corner between sections 3 and 4, indicated by the arrow 5, as the ends of these cleats at this corner are positioned too close together. Assuming that the blank of Fig. 2 could be folded without breaking the wire, to produce the box indicated in Fig. 3, that box would not be a reasonably salable, usable box.

Referring to both Plaintiffs' Exhibits 41 and 42, the fact that those defective cleats have been fed and positioned by blocks engaging their shoulder has not in the least overcome inaccuracies due to the erroneous cutting of the cleat. It is not true of either of Plaintiffs' Exhibits 41 or 42 and the cleat positioning arrangement there shown, that "by properly positioning the pusher to engage the shoulder, the desired accuracy of the construction of the box is secured * * *"

The arrangement of the red positioning blocks in Exhibits 41 and 42 is the correct arrangement for properly positioning standard cleats having standard cut tongues and grooves.

Q. 186. Now, if instead of having the block engage the cleat shoulders of these defective cleats, the blocks were made to extend between cleat ends, so that each cleat would be positioned by the block contacting with the extreme rear end of the tongue, how would that affect the results in using these defective cleats To illustrate the substitute arrangement I have in mind, I refer you to Plaintiffs' Exhibit No. 19 shown opposite page 111.

A. By using space blocks as shown in the Plaintiffs' Exhibit No. 19, and using defective cleats as shown in Plaintiffs' Exhibits 41 or 42, you would have the same result as to inside measurement after the blank is folded in box formation but by using the blocks as shown in Plaintiffs' Ex- [fol. 1009] hibit No. 19, the cleat ends would be properly spaced as to the edges of the side sections.

If the blank were made according to the manner indicated in Plaintiffs' Exhibit No. 19, you would have the same difficulty in folding the blank having these defective cleats as you have as shown in Plaintiffs' Exhibits 41 and 42, at Figs. 3.

Q. 188. In the employment of the defective cleat as illustrated in Plaintiffs' Exhibits 41 and 42, which manner of positioning and feeding the cleats, if either, would be

superior, the shoulder positioning method shown in Exhibits 41 and 42, or the tongue end positioning method shown in Plaintiffs' Exhibit 19?

A. In the first place, I don't think there would be any difference in the boxes. The boxes would be defective and not salable. But if there is any difference I would say it would be in favor of the box in which the cleats were fed from their extreme ends, because in that instance the cleat ends are spaced in their exact relation to the sheet edges.

In defendant's machine, I can see no advantage in positioning cleats against blocks engaging their shoulders instead of positioning them by blocks engaging the tongue ends as indicated in Plaintiffs' Exhibit No. 19, assuming in the latter case a sufficient clearance to permit the cleat to be readily inserted and removed.

Q. 190. Defendant's expert, Mr. McElroy, has testified:

"In the defendant's so-called third method, there is nothing interposed between the adjacent extreme ends of the cleats, and any cleat behind is free to move forward and engage the rear end of a cleat in front. * * *"

What, if any, utility is there, and what advantage, in this circumstance?

A. Not any.

Q. 191. Mr. McElroy has also said:

"With this so-called third method, as practiced on the defendant's licensees' machines, the adjacent ends of the cleats can be either nearer to each other or farther apart, and can be so close together that they practically touch, and this can be taken advantage of to insure much greater tensioning of the wires than can be obtained by the spacer system or method, for when spacers are used the cleat ends cannot touch each other and hence defendant's new or third method not only uniformly and predeterminately and accurately positions all of the cleat shoulders in the ultimate [fol. 1010] box, but also permits of greater tensioning of the wires."

Please state whether or not it is true as you have observed in defendant's machine that the adjacent ends of cleats are in fact positioned nearer to each other or farther apart than is true in plaintiffs' machine.

A. This is not true.

The fact is that there is not any difference in the distance between the cleats on defendant's third machine and the distance between the cleats on plaintiffs' machine. The advantage of this particular spacing between one cleat and the next which is employed both in plaintiffs' machines and in defendant's machines is so the cleats will fold in foldable relation and have the proper tensioning on the binding wire over the corner. Supposing in either plaintiffs' or defendant's machine adjacent cleat ends were positioned substantially closer together than the spacing which is in fact used by both plaintiffs and defendant, the effect that would have would be that the binding wires would be too tight over that corner. The effect of that might be that it would sever the binding wire at that corner.

Supposing that adjacent cleat ends were positioned substantially farther apart on either plaintiffs' or defendant's machine than the space actually employed by both plaintiff and defendant, the effect that would have would be that the binding wires would have no tension on that corner. That box would be a cull, because in handling that box the wire would slip over the end of the corner and the wire is the only part of the box that holds the box together.

Q. 198. How long has plaintiff been using this idea of spacing one cleat end from another which is now employed by defendant?

A. Ever since the beginning of their industry, which is to my knowledge more than twenty years.

Plaintiff has been using this particular spacing for tongue and groove cleats, which defendant is now using, ever since the time when tongue and groove cleats were first used in the wirebound box industry, which was more than ten or twelve years ago.

I can and do produce a drawing illustrating the effect of what Mr. McElroy suggests that

"With this so-called third method, as practiced on the defendant's licensees' machines, the adjacent ends of the cleats can be either nearer to each other or farther apart. • • •"

[fol. 1011] Mr. Siljander prepared this drawing under my instructions.

By Mr. Janney: The drawing just produced by the witness is offered in evidence as Plaintiffs' Exhibit No. 43, the drawing to bear the title "Plaintiffs' Drawing Illustrating Impracticability of Spacing Cleats Closer Together or Farther Apart on Defendant's Machine."

By Mr. Cox: Objected to as incompetent, irrelevant and immaterial.

By Mr. Janney: The effect of this drawing and the testimony to be given with reference to it, is to establish a flat contradiction of assertions of alleged distinctions emphasized by defendant's expert McElroy.

(Here follows Plaintiffs' Exhibit No. 43, side folio 1011½.)

In Plaintiffs' Exhibit 43, the parts shown in brown are cleats. The parts shown in yellow are sheet material. The parts shown in red are space blocks. The two arrows indicate the direction of travel of the parts shown, under the stapling devices.

In Fig. 1 of Plaintiffs' Exhibit 43, the cleats are of standard size with their tongues and grooves correctly dimensioned. The cleats in Figs. 2, 3 and 4 are just the same. The dimensions given on Plaintiffs' Exhibit 43 are true and accurate to represent the effects of the illustrated arrangement of blocks and cleats. The arrangement of blocks and cleats in Fig. 1 of Plaintiffs' Exhibit 43 differs from the actual arrangement used on defendant's machines as I observed them, for instance, as illustrated in Plaintiffs' Exhibit 29, in that in Plaintiffs' Exhibit 43, in Fig. 1 the cleats are positioned with their extreme ends ¼ inch closer than as shown in Plaintiffs' Exhibit 29.

In Fig. 1 of plaintiffs' Exhibit 43 the cleats are shown to be 8 inches long. To make a proper box employing these 8 inch cleats and providing the usual overlap at the box corners, the side sheet in section 1 of Fig. 1 of Plaintiffs' Exhibit 43 should be 8 inches in width. But as shown in Fig. 1, I have the side sheet in section 1 dimensioned as 7¾ inches in width. If the cleats are to be spaced closer together than should be on a perfectly manufactured box, the sheet positioning fins of the space block would be too close together and you could not insert between these fins the proper width sheet.

FIG. 1.

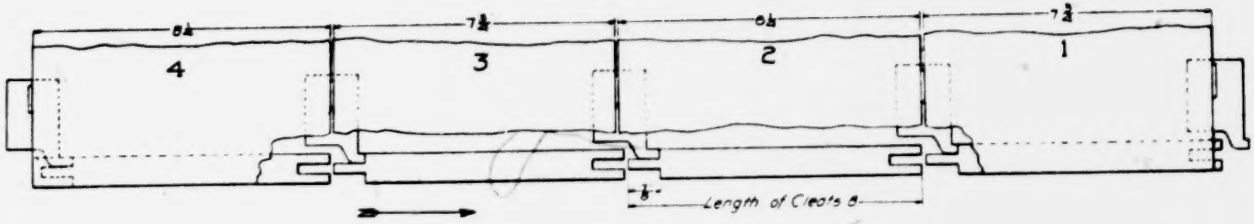


FIG. 2

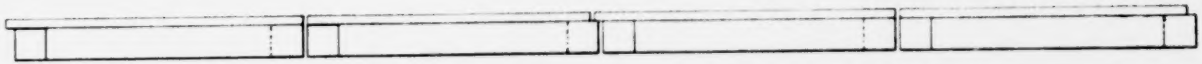


FIG. 3.

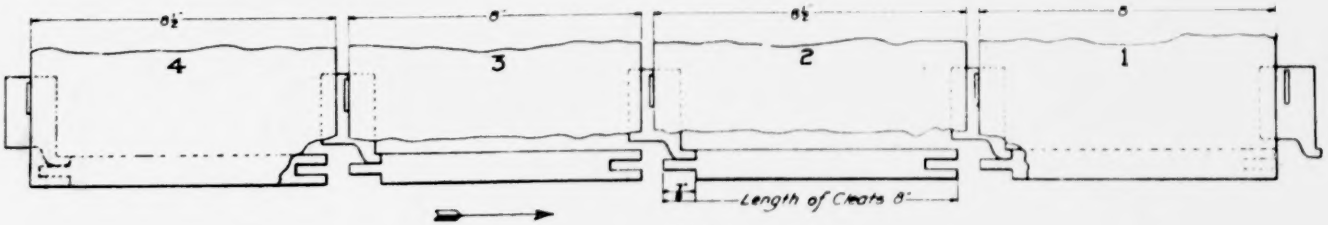
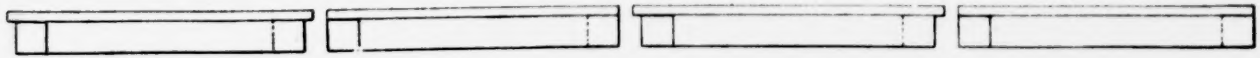


FIG. 4



PLAINTIFFS' DRAWING ILLUSTRATING IMPRACTICABILITY OF SPACING CLEATS CLOSER TOGETHER OR FARTHER APART ON DEFENDANT'S MACHINE

PLAINTIFFS' EXHIBIT NO. 43.

In order to make a proper box with the usual overlap margin, using the 8 inch cleat, the width of the sheet for [fol. 1012] the section numbered 2 in Fig. 1 of Plaintiffs' Exhibit 43 should be 8½ inches, but in Fig. 1 of Plaintiffs' Exhibit 43 the sheet for section 2 is dimensioned as only 8¼ inches wide, because in spacing the cleats close together, the distance between the sheet positioning fins on the space blocks at the rear of the cleat in the first section and at the rear of the cleat in the second section is too narrow to insert the proper width sheet.

The sheets for sections 3 and 4 in Fig. 1 of Plaintiffs' Exhibit 43 are each ¼ inch narrower than they should be to produce a proper box with the usual overlap margin, and for the same reasons which I have already stated with reference to sections 1 and 2.

Fig. 2 of Plaintiffs' Exhibit 43 shows the side sheets and cleats of the same dimension and in the same relationship shown in Fig. 1. The blank shown in Fig. 2, when wired, could not be folded into box form, as the wires would be too tight over the corners and would undoubtedly break the wires at the corners. If it were possible to close the blank of Fig. 2, when wired, it would not produce an efficient lap-cornered box, because the second and fourth sections have only overlapped margins on the rear end of the cleats and sections 1 and 3 have no overlap margins on either end of the cleat, and on the advance edge of section 1 the sheet falls short of the cleat ends ¼ inch and on section 3 the sheet edge falls short of the cleat ends ¼ inch which would leave an open space in both the front and rear sides of the box when folded.

In Plaintiffs' Exhibit 43, the arrangement shown in Figs. 3 and 4 differs from the arrangement actually employed upon defendant's machine as illustrated, for example, in Plaintiffs' Exhibit 29, in that in Plaintiffs' Exhibit 43, Figs. 3 and 4 show the cleats spaced apart ¼ inch farther than they should be, or ¼ inch farther than is shown in Plaintiffs' Exhibit 29. The side sheets for sections 1 and 3 in Figs. 3 and 4 are dimensioned as 8 inches in width, and the side sheets for sections 2 and 4 are dimensioned as 8½ inches wide. These are the correct and normal dimensions which would ordinarily be used on defendant's

machine as they should be in making a proper wirebound box using cleats 8 inches long, if the cleats were properly spaced apart. The sheets are of the same dimensions as the defendants use on their machines when using cleats 8 inches long. But in every instance in Fig. 3 of Plaintiffs' Exhibit 43, the advance end of the sheet is spaced $\frac{1}{4}$ inch from the adjacent sheet positioning fin; that is not in ac- [fol. 1013] cordance with defendant's practice; it differs from defendant's practice because their practice is to have the sheets of all four sections fill the spaces between each fin and its adjacent fin. In Plaintiffs' Exhibit 43, Figs. 3 and 4, the cleats and sheets are shown of the same dimensions and in the same relationship as determined by the positioning blocks shown in Fig. 3. If the blank shown in Fig. 4 were wired, it could be folded into box form, but it would not be a salable box, as the wires over the corners would be so loose that it would not draw the tongues and grooves into full mesh, and the box would be oversize in dimensions.

Referring to Plaintiffs' Exhibit 43, Figs. 1 and 2, the red positioning block at the extreme right in Fig. 1 could be adjusted so as to permit the advance end of the side sheets for section 1 to extend clear out to the right-hand end of the cleat. That would not affect the relative spacing of the cleats otherwise shown in Fig. 1. That would not affect the difficulty of folding the blank of Fig. 2 or the breaking of the wire or the leaving of a gap between sections 2 and 3, if the blank could be folded in box form. The breaking of the wire would be just the same and you would still have the gap between sections 2 and 3.

Referring to Figs. 3 and 4 of Plaintiffs' Exhibit 43, if the sheets were made $\frac{1}{4}$ inch wider so that each would fit properly between the adjacent sheet positioning fins, the effect of that would be that in folding the blank as just described, the wires would be tensioned over the corner, but your box would be oversize in dimensions and the cleats would not be properly meshed.

In Fig. 3, if the red block at the extreme right of the figure were adjusted toward the left so as to contact with the right-hand edge of sheet 1, that would not affect in any way the relative positioning of the cleats otherwise in this figure and the resulting effect in the blank of the box, which I have pointed out.

All of these drawings in Plaintiffs' Exhibits 29, 41, 42 and 43 represent the side sheets to be 1/4 inch thick.

When standard cleats and 1/4 inch thick sheets are employed on plaintiffs' machine, the distance between one extreme cleat end and the next, using tongue and groove cleats, is one-fourth inch plus 3 32. Under the same condition, the distance between one cleat and the next in defendant's third machine is just the same.

In plaintiffs' machine, if standard cleats are used with sheet material only 1/8 inch thick, the distance between the extreme cleat ends is 3 16 inch, plus the margin that is left [fol. 1014] for assembling that cleat, that is, a margin of 1 32 inch. The cleats are positioned with their ends closer together when eight inch side material is used than when quarter inch side material is used. In order to get a tension over the corners when thinner sheet material is used the ends of the cleats must be closer together and this same dimension is used on the manufacturing of all foldable wirebound boxes. In making wirebound boxes using as I have stated 1/8 inch side sheets, with the proper overlap, the distance between the ends of the cleats is fixed so that when folding this blank, the proper tensioning of the binding wires will result. When I said "This same dimension is used on the manufacture of all foldable wirebound boxes," I meant that the same dimension between cleat ends were used on all wirebound boxes using the same dimension of thickness of side sheets. For instance, in using 1/8 inch side sheets, the ends of the cleats are spaced apart 3 16 inch plus the clearance of the cleat which is 1 32 inch, and that same dimension is used in all foldable wirebound boxes using 1/8 inch sheet material and the proper overlap. The same rule holds good in using side sheets of other thickness than 1/8. For instance, in using side sheets 1/4 inch thick, the distance between the cleat ends is 1/4 inch plus 3 32 inch, and this dimension is the same in all foldable wirebound boxes when the sheets have the proper overlap.

In the use of plaintiffs' machines as they are made today, assuming that the machine is set up for making blanks with 1/4 inch material, and you desire to change the machine for making blanks with 1/8 inch material, to suit this change from 1/4 inch to 1/8 inch material it is necessary to take the positioning blocks off the chain and substitute for them blocks made for the purpose of making blanks using 1/8

inch sheet material. The blocks for plaintiffs' material for handling ¼ inch material differ from plaintiffs' blocks for handling ⅛ inch materials in that the portions of the block which determine the overlap are ⅛ inch shorter on the blocks when we are making blanks using ⅛ inch side sheet material, than the overlap portions of the blocks when using ¼ inch side material. The effect this has upon the width of the overlap margin produced on the ⅛ inch material is that it allows you only ⅛ inch overlap instead of ¼ inch.

Now on defendant's machine, if it is set up for making blanks using ¼ inch side material, and they want to change it for making blanks from ⅛ inch side material, the posi- [fol. 1015] tioning face of the defendant's block to determine the overlap margin would have to be cut away ⅛ inch.

Q. 244. What is the practice in making the change, to cut away the former blocks used with the ¼ inch material or to substitute other blocks of different dimensions?

A. I have never seen in any of the defendant's plants that I have visited, or at least never noticed, any block of any different dimensions than those shown in Plaintiffs' Exhibit 29, or shown in Plaintiffs' Exhibit 28, at Figs. 2 and 3.

You could not make blanks from ⅛ inch material on defendant's machine and produce a proper overlap margin, if you used the same blocks shown, for instance, in Plaintiffs' Exhibit 29.

Q. 246. Mr. McElroy said in his recent testimony:

"With this so-called third method, as practiced on the defendant's licensee's machines, the adjacent ends of the cleats can be either nearer to each other or farther apart, and can be so close together that they practically touch, and this can be taken advantage of to insure much greater tensioning of the wires than can be obtained by the spacer system or method, * * *."

Suppose the cleats were in fact positioned "so close together that they practically touch," would it or would it not be possible to make a foldable blank?

A. In all cases of foldable wirebound boxes the cleats must be spaced apart so that the distance of cleat ends

is slightly greater than the thickness of sheet material used when the proper overlap is used.

And if the cleat ends were "so close together that they practically touch," and the resulting wired blank were folded, the wires would break apart. On defendant's machine, if the opportunity to move the cleats together were in fact "taken advantage of," as suggested by Mr. McElroy, "to insure much greater tensioning of the wires than can be obtained by the spacer system or method," the resulting blank would not be a foldable wirebound box blank. In such a blank the wire would be too tight at the corners. There would not be any virtue in this "much greater tensioning of the wires."

Q. 252. Please refer to the workholder patent in suit, No. 1,128,144, and observe particularly Fig. 1 and Fig. 7. Assume that the rear half of each spacer block of the first, second, third and fourth pairs (counting from the top of Fig. 1), is completely cut away so that when cleats are posi- [fol. 1016] tioned in the workholder with their rear ends against the front faces of the spacer block, there would be a clearance of one-fourth inch or more between the advance end of each cleat and the adjacent spacer block. If cleats were now inserted in this modified workholder, each cleat being positioned against its rear spacer block, and being engaged by the spring 15, would this workholder or would it not be an efficient workholder to be fed through the stapling machine for wiring the blank sections assembled thereon?

A. It would be an efficient workholder and when the wires were stapled to the blank it would be a foldable blank.

Q. 253. What would hold the cleats properly positioned with their rear ends against their rear spacer blocks?

A. Spring 15.

Q. 254. State whether or not the spring 15 would hold each cleat properly positioned against its rear spacer, in spite of an intermittent feeding motion of the workholder under the staple head.

A. They would.

It would not make any difference in this operation, that there would be a clearance of one-fourth inch or more between the advance end of each cleat and the rear part of the preceding block, if a cleat was positioned against its

spacer block at the rear end of the cleat and the spring 15 was engaged at the side of the cleat. That pair of cleats would be positioned.

Q. 256. Then what have you to say as to the truth or untruth of this remark which I quote from the recent testimony of defendant's expert McElroy:

"The spacer method, which is the interpositioning of spacer blocks between adjacent ends of the cleats, with the blocks shaped to initially position the cleats relative to each other, and with each block shaped to have a positioning function on both its front and rear sides, is absolutely essential and mandatory in the patents in suit."

Is that statement true or untrue?

A. It is untrue. As I have stated before that when the end of the cleat is positioned against this spacer block at the rear of the cleat and is held in that position by the spring 15 the block at the front end of that cleat would have no function as to the spacing of that cleat.

In the operation I have just described, the spring 15 shown in Fig. 1 of the workholder patent in suit, would serve this purpose, quoting from Mr. McElroy:

[fol. 1017] "* * * will insure that the rear ends of the cleats are held tightly against the pushers while the sheets and cleats are passing under the stapling mechanism."

On defendant's third machine, shown, for instance, in Plaintiffs' Exhibit 29, it is important to have something in front of the advance end of each cleat to prevent the cleat from moving endwise too far away from the positioning block at its rear end, because if the cleat could advance as far ahead of the positioning block as the length of the tongue on the cleat which is 7/8 inch in many instances the face of the positioning block would engage the extreme ends of the tongue instead of engaging the shoulder and would make an imperfect blank.

Q. 260. Referring to Plaintiffs' Exhibit 35, Mr. McElroy said:

"* * * it would be sufficient if the blocks 11 and 12 were placed just far enough ahead of the cleats to prevent the possibility of the rear ends of the cleat tongues being engaged by the pushers."

Is this the same thing that you had in mind in answering my next preceding question; that is, the need of something "to prevent the possibility of the rear ends of the cleat tongues being engaged by the pushers," as Mr. McElroy said?

A. Yes, sir, exactly.

In defendant's machine as I observed it, I am sure there was at least 1 16th inch play between the cleats and the sides of the channel. In other words, I am sure that the channels were at least 1 16th inch wider than the width of the cleats, although I did not measure them. That width of channel would, in many instances, allow sufficient sidewise play of the cleat to permit the spacer block at the rear to engage the extreme end of the cleat tongue if the cleat were moved far enough forward.

Q. 263. In the commercial manufacture of wirebound box-blanks, would it, or would it not be practicable to employ a channel of only sufficient width to receive the cleat snugly between the channel walls so as to prevent such sidewise play, as I have just referred to?

A. In the plaintiffs' machines that I am most familiar with, we find it necessary to have the cleat channels or chains at least 1 16th inch wider than the width of the cleat because in many instances the cleats are warped and cleats of any length and warped will take up a variation of 1 16th inch in the channel.

[fol. 1018] Q. 264. Then what have you to say as to the following statement quoted from the recent testimony of defendant's expert McElroy:

"Furthermore, if the cleats are accurately made and if the defendant's machine is accurately proportioned, so that the cleats cannot be displaced sidewise, there is then no danger of the front cleats jumping ahead and having the rear ends of their tongues engaged by the pushers."

What is the fact, aside from Mr. McElroy's "ifs": are cleats so accurately made and is defendant's machine so "accurately proportioned," "that the cleats cannot be displaced sidewise" sufficiently to let the rear positioning blocks engage the tongue ends of the cleats?

A. The defendant's machine as I have noticed them were made with the clearance as I have described before and no matter how perfectly these cleats are manufac-

tured, if they are manufactured one day and used the third day after they will be warped and crooked so that you could not place them in a perfectly made chain to fit a perfect cleat.

Q. 265. Mr. McElroy quotes from defendant's Craig patent 1,565,909, granted Dec. 15, 1925 (page 3, line 25, et seq.):

"Moreover, with this arrangement and method [such as that illustrated in Plaintiffs' Exhibit 29], blanks can be made with the tongues actually inserted a distance into the grooves of the adjacent cleats. * * *"

State whether or not on defendant's third machine it would be possible to make a foldable blank by wiring together sections, the cleats of which were positioned so that tongues are "actually inserted a distance into the grooves of the adjacent cleats"?

A. They could not make a foldable blank with the ends of the tongues of the cleats inserted into the groves of the adjacent cleats.

The wires would break in every instance at every corner if you tried to fold such a blank.

Direct examination closed.

[fol. 1019] Cross-examination.

By Mr. Cox:

By Mr. Cox: Without waiving objections I will cross-examine the witness.

I have testified that the plaintiffs' licensees or some of them employ a cleat machine like the one shown in Plaintiffs' Exhibits Nos. 36 and 37. All of plaintiffs' licensees do not employ a machine like that for producing cleats. Roughly, I will say that 50% use cleat machines as shown in Plaintiffs' Exhibits Nos. 36 and 37; the other 50% of plaintiffs' licensees, with the exception of one or two, use cleat machines of a Fay and Egan type. To my knowledge, none of plaintiffs' licensees make their cleats entirely or partly by hand.

X Q. 271. Would it be practical from a commercial standpoint to make the cleats or sheets by hand or to assemble

the parts of the blank by hand or fasten the parts together by hand?

X Q. 273. The witness may assume the use of hand tools such as saws, hammers, rabbet planes and the like.

A. It is not a commercial practice to manufacture cleats by hand using hand tools or to manufacture sheets by hand using hand tools, but it is a commercial practice to assemble these parts by hand.

X Q. 274. Do you know of any cases where the sheets, cleats and wires have been assembled by hand commercially in distinction to assembling them on the machine provided with a stapler and guides for the material and means for feeding the materials through the stapler?

A. I know that this thing happens, that when making wirebound boxes to be used commercially in some instances there might be a kink in the stapling wire for one of the eight cleats in that blank to have no staples driven in that cleat. To repair that blank there might be staples driven by hand with a hammer. However, we make special tools for that purpose. This also happens. I have known wirebound boxes to be made in one or two instances by assembling the parts (that was commercially made by machinery) by hand in order to insure the box to be the exact size for the contents which it was to carry. However, these boxes were never used for commercial use.

X Q. 274a. In your answer to X Q. 273, you say it is a commercial practice to assemble these parts by hand and in your last answer you say that boxes in which the parts were assembled by hand were never used for a commercial use. Can you straighten this out so that we will get a clearer idea of the situation?

A. I meant that in the plaintiffs' commercial machines [fol. 1020] that all of the box parts were assembled in the workholder of these machines by hand. I also mean in answer to the latter part of X Q. 274, where the binding wires are stapled on the box, sheets and cleats by hand, to my knowledge these sheets and boxes were not used for commercial use, that is, when all four sheets and all eight cleats are assembled and the wires stapled by hand.

It is true that in all of the wirebound box-blank-making machines with which I am familiar the staples are driven by automatic staple drivers. It is also true that all of the wirebound box-blank-making machines with which I am

familiar have automatic means for feeding the sheets and cleats forward to the stapling mechanism. I don't know of any cleat-making machines used in the manufacture of wirebound boxes by the plaintiffs' or defendant's licensees in which one end of the cleat is formed and then the other end is formed after the complete formation of the first end. I know of no cleat-making machine used by the licensees of either the plaintiffs or defendant in which the cleats are cut or trimmed to exact length in one machine and the tongues and grooves afterwards formed in another machine. I do not know of any factories making wirebound box blanks in which the binding wires are fastened to the sheets and cleats in the ordinary process of manufacture by using a hand hammer for driving the staples, except in cases where the automatic stapling heads have missed a few staples on the blank and staples are driven by hand in order to repair that blank.

X Q. 280. It would be fair and correct, wouldn't it, to say that no manufacturer could hope to be commercially successful in producing wirebound box blanks unless he produced the sheets and cleats by power machinery and unless he used a blank machine having an automatic stapling head and power means for feeding the box blank materials forward toward the stapling head?

A. I do not think any manufacturer who would manufacture wirebound box parts by hand and wire them by hand by driving staples over the wire through the sheets and into the cleats, could sell that blank for price enough to pay for the labor required to do the work.

Referring to the Chase Company cleat cutting machine shown in Plaintiffs' Exhibits 36 and 37, the tenoning saws 19 and 20 are adjustable closer together and farther apart. The guides 13-14 in that machine are adjustable closer together and farther apart. The trim saws 9-10 are adjustable closer together and farther apart.

In my answer to Q. 133 I say: "In many instances the [fol. 1021] tongue is not in the exact center of the cleat." That happens by feeding cleat material to the cleat machine before it is ripped into cleat widths and if this cleat material which is a board is warped, the tongues will be off center. Under such conditions the grooves likewise will be off center, but remember that all of the cleats that are ripped from this warped board the tongues and grooves

may not be off center, but part of the tongues and grooves on the cleats ripped from a warped board will be off center.

X Q. 286. It happens every once in a while, doesn't it, that the tenoning saws 19-20 of Exhibit 36 and the guides 13-14 and trim saws 9-10 have to be checked up and readjusted to bring them to correct position after they have been in use a while?

A. The arbor that carries the tenoning saws 19-20 is fastened to the channels that carry the feed chains. I don't know of any instance where these saws get out of adjustment as to their fastening but the guides 13 and 14 might spread apart if a cleat should get caught between them and the trim saws 9-10 might get shifted. However, in my observation and my practice of making cleats and wirebound boxes this error is caught immediately and the parts that have gotten out of adjustment are readjusted.

The tenoning saws 19-20 have to be sharpened from time to time. Sharpening does not tend to make them of smaller diameter. These saws are inserted-tooth saws and when the saw is to be sharpened they change teeth, which makes the exact diameter as the saw was in the beginning. Exhibit 36 does not show any such teeth in the saws; this drawing is correct relative to the size of the saws and the shape of the teeth, but does not disclose the line to represent the inserted teeth, which is a small piece of steel that clamps into each tooth. I would not say that the teeth in these tenoning saws 19-20 are adjusted radially every time they are sharpened, but I have no doubt that in some instances they are brought to a point by filing before new teeth are inserted in the saw, and by filing would make these saws smaller in diameter than they were at first. However, the amount that is taken off of the end of each saw tooth is watched very closely so that the saws are not small enough in diameter to make any material difference in tongning and grooving cleats.

X Q. 292. As a matter of fact, the teeth in these tenoning saws are not radially adjustable at all, are they? Isn't it true that they never occupy but one position and are used until the man in charge of the machine finds that [fol. 1022] they are worn away to a point where new teeth should be substituted?

A. The saws themselves cannot be radially adjusted but the arbors on which the saws are fastened can be adjusted

closer together or farther apart. However, there are very few instances when these arbors are adjusted because the teeth are worn on the saws. At the time the teeth are worn so that they would not cut the cleat groove to the exact depth or the tongues to the proper length new teeth would be assembled in the saw.

In my direct testimony I have discussed at considerable length what would happen if a groove were too shallow or too deep, or if a tongue were too long or too short. But in every one of the examples discussed by me and shown, for example, in Plaintiffs' Exhibits 41 and 42, I have assumed a cleat in which the distance from the shoulder at the tongue end to the bottom of the groove at the other end was correct and I have assumed a cleat in which the overall length was correct.

X Q. 295. Now let us assume a cleat in which all the measurements are correct except that the tongue is too short. In defendant's method in which the cleats are moved forward by pushers which engage the shoulder of the cleat such a cleat as I have assumed could be correctly assembled and the finished box would be practically perfect, wouldn't it?

A. I don't exactly get what you mean. There could not be a cleat where all dimensions are perfect except that the tongue is too short. A cleat could not be manufactured with those dimensions.

X Q. 296. If you will hand me a cleat and give me a saw I will show you a cleat which is perfect in every way except that the tongue is too short. All I will have to do is to saw off part of the tongue. Please assume a cleat which is perfect except that the tongue is too short and the overall length correspondingly short, and answer my previous question.

By Mr. Janney: This question is purely theoretical and is based upon hypothetical conditions which, as the witness has made clear, cannot arise in the commercial practices of either plaintiffs' licensees or defendant's licensees. Hence, the merely speculative character of the question renders it objectionable as irrelevant, immaterial and incompetent.

By Mr. Cox: The objection of plaintiffs' counsel is based upon an erroneous premise. The witness has testified on

cross-examination that only half the plaintiffs' licensees use a machine like the one shown in Plaintiffs' Exhibits 36 [fol. 1023] and 37. The record does not disclose what kind of machine, if any, the other half uses, nor what kind defendant's licensees use. It was a violent assumption which plaintiffs' counsel made when he assumed that all cleats have a constant distance between the bottom of the groove and the shoulder at the base of the tongue. I am now asking a question about cleats having a different kind of error which is quite proper and well within the abilities of this witness to answer.

By Mr. Janney: The foregoing remarks by defendant's counsel are mistaken in fact. In answering Q. 6 this witness said: "In cutting cleats with cleat machines that are used to manufacture cleats in the wirebound industry, it is impossible for the cleats to vary enough to make any difference in the wirebound box, no matter whether they are fed from the shoulders of the cleats or the extreme end of the tongue." In answering Q. 7 he explained that the trim saws produce this effect. In answering Q. 84 et seq., the witness explains his frequent visits to and his complete familiarity with "all of the plaintiffs' licensees' plants * * * more than sixty in number," and his observation of the cleat cutting operation in all those plants, and then in answering Qs. 87, 88 and 89 he explains that there isn't any practical importance in the wirebound box industry of inaccuracies or variations in the lengths of the cleat tongues—"they don't vary in length enough to make any difference"; there is "absolutely not any" possibility as a practical proposition, that inaccuracies or variations in the lengths of cleat tongues might interfere with the production of properly dimensioned boxes.

The witness was asked to describe only one form of cleat cutting machine, shown in Plaintiffs' Exhibits 36 and 37, because that was the particular machine used by defendant's licensee, Maxwell Bros., Inc.; and it was desired to show that the operation of defendant's licensee, employing that particular cleat cutting machine, uses cleats of uniform accuracy so that the alleged defective cleat theory which has been so stressed by defendant's expert, has no application in the practice of defendant's said

licensee. Description of other types of cleat cutting machines were not resorted to because they were wholly unnecessary and irrelevant, the general statements by the witness above referred to having sufficiently shown that [fol. 1024] none of the cleat cutting practices among all of plaintiffs' licensees resulted in the hypothetical defective cleats referred to by defendant's counsel. I repeat that this branch of the cross-examination, in the light of the direct testimony of this witness, and so far as appears elsewhere in the record, is purely speculative and is irrelevant, immaterial and incompetent. Even in the testimony of defendant's expert McElroy there is absolutely no showing of any practice which would produce the defective cleats.

A. In answering X-Q. 295 it would be hard for me to assume a cleat as asked for in this question, but I can assume a cleat manufactured with the tongue too short if the overall length of the cleat was equally short. To assume a cleat whose overall length was too short and the tongues being equally too short, it could be assembled in the defendant's blank machine and a box folded made from this cleat would have the proper inside dimensions just the same as it would if it would be placed in the commercial machine of plaintiffs' licensees. However, in all my experience in the wirebound box industry I have never seen any orders furnished to the cleat department to cut cleats except with the overall length of these cleats to be the inside dimensions of the folded blank and I have never seen any cleats, in any of the factories who use the plaintiffs' machines or defendant's machines, of which the overall lengths were shorter than intended.

X Q. 297. Referring to Plaintiffs' Exhibit 36 showing the Chase cleat making machine, it is true, isn't it, that if the trim saw marked 9 and the guide marked 13 were adjusted a quarter of an inch nearer the center of the machine the resulting cleat would be in all respects like the standard cleat with the exception that the tongue would be ¼ inch shorter and the overall length of the cleat ¼ inch shorter. Is that true?

By Mr. Laughlin: Plaintiffs' counsel desires to reiterate the objection that the described modification is purely theo

retical and based upon hypothetical conditions contrary to the practices of wirebound box manufacturers.

By Mr. Cox: The witness has testified that the trim saw 9 and guide 13 enquired about are adjustable in the manner specified in the question and therefore plaintiffs' counsel is evidently in error and the question is thought to be proper.

By Mr. Laughlin: Plaintiffs' counsel does not agree that the witness has testified that the trim saws 9 and 10 and the [fol. 1025] guide 13 are "adjustable in the manner specified in the question." The previous testimony of the witness is very explicit that the trim saws 9 and 19 are always spaced apart a distance equal to the overall length of the cleat to be made, and while it has been explained that the parts are adjustable with relation to each other, the question remains objectionable because it assumes a speculative and hypothetical readjustment or modification of the cleat cutting machine contrary to the universal practices of both plaintiffs' and defendant's licensees as far as this record shows. The formation of the cleats used by defendant's licensees is well illustrated in the stipulated drawing Plaintiffs' Exhibit No. 29.

By Mr. Cox: The purpose of this inquiry is to elicit what happens when particular and unintended conditions arise, and not what happens when all conditions are perfect. For this reason the witness has been asked what would happen if the cleats though standard in every respect except in having a shortened tongue and correspondingly shortened overall length. This condition would arise if the trim saw 9 and guide 13 of Plaintiffs' Exhibit 36 were adjusted nearer to the longitudinal center line of the machine. The witness has testified to X Q. 281 et seq. that these parts were adjustable is now merely being asked what would happen under a certain adjustment or mal-adjustment of the two parts 9 and 13. The question is, therefore, obviously proper and along the same line as the direct testimony.

By Mr. Laughlin: Plaintiffs' counsel does not desire to obstruct cross-examination in the least but wishes to have no misunderstanding on the point that the suggested rearrangement is "unintended" and a "mal-adjustment" as explained by defendant's counsel.

A. I doubt very much if the Chase turbine cleat machine as shown in Plaintiffs' Exhibit No. 36 or their standard machine would allow trim saw No. 9 adjusted towards the channel a quarter of an inch without the collar of the saw engaging the side of the channel, but if this could be done, and I have never seen it done, and the guide 13 could be adjusted one quarter inch toward the center line of the machine and if tenoning saws 19 were left as they were in making a proper cleat the product that you would get from [fol. 1026] this machine after making these adjustments would be a standard cleat with the exception that the tongues of the cleats would be one quarter inch too short and the overall dimensions of the cleat length would be one quarter of an inch too short.

X Q. 298. Suppose the cleat cutting machines shown in Plaintiffs' Exhibit No. 36 were adjusted by moving the guide 14 inward towards the center line of the machine and the trim saw inward toward the center line of the machine all other parts of the machine remaining as before, wouldn't this produce a cleat which is standard except that the overall length would be correspondingly reduced and the length of the legs at the side of the groove be correspondingly reduced?

A. If the guides 14 would be adjusted inwardly toward the center line of the machine and if the trim saws 10 could be adjusted inwardly towards the center line of the machine the equal distance that the guide had been moved inwardly, you would produce a cleat whose overall dimensions would be shorter than a standard cleat and the groove would be correspondingly shallower than a standard cleat. However, I have never seen this done.

In substance my last answer is yes, providing the guide 14 and the saw 10 is moved inwardly toward the center line of the machine an even distance.

X Q. 300. Let us call a cleat such as we have last been talking about a cleat with shortened legs. In defendant's method in which the cleats are fed with the groove ends foremost and the cleat pushers engage the shoulders at the tongue end of the cleat, would not such a short legged cleat produce a box-blank that was foldable and commercially salable and for all practical purposes a perfect article?

By Mr. Laughlin: The question is objected to as speculative and based upon an unwarranted assumption: It is

suggested that this latest assumed malformed cleat be referred to as a "short-legged cleat with shortened overall length" to distinguish from the cleats testified about in connection with Plaintiffs' Exhibit No. 42, which shows an assumed inaccuracy in cleat dimensions in which the legs of the grooves are shorter than intended, but the overall length is the same as in a standard cleat.

By Mr. Cox: The witness may answer on the basis suggested.

A. Assuming that a blank being made using improperly made cleats, the overall length of the cleats being shorter than they should be and the grooves being correspondingly [fol. 1027] shallower these cleats being positioned by the shoulders at the rear end of the cleats and the grooves being fed foremost in the machine, this will make a foldable blank but the extreme groove end of the cleat will fall short to its adjacent side material after the box-blank is folded and you would have considerable complaints from the box users as to the appearance of the end sections of this box.

X Q. 301. Please refer to Plaintiffs' Exhibit 38, plaintiffs' drawing illustrating alternative use of positioning blocks to engage cleat shoulders or cleat ends. You say in your answer to Q. 92:

"We position cleats the groove end of the cleats leading under the stapling point and are positioned by a space block against the shoulder on the tongue end of the cleat."

In this practice the space blocks fill practically all of the space between the cleats, don't they? And practically speaking, prevent the cleats from moving endwise either forward or backward?

A. In Plaintiffs' Exhibit No. 38, Fig. 1, using tongue and groove cleats as each figure designates, it is our practice to position the shoulder of the cleat against the space block at the rear of the cleat and the distance between the positioning face of the space block at the rear of the cleat and the rear face of the space block at the front of the cleat is approximately 1/32 of an inch more than the length of the cleat. The rear of the space block at the groove end of the cleat would not allow this cleat to move forward from its positioning block more than the space allowed.

The blocks as shown in Fig. 1 of Plaintiffs' Exhibit 38 does not in any sense protrude between cleat ends.

Those space blocks of Exhibit 38 lie only between one shoulder of the cleat ahead and one leg of the cleat behind.

Referring to Figure 2 of Exhibit 38, the cleat behind the space block 4 can move forward from a position in which the rear end of the cleat engages the block behind it, a distance equal to the space left for clearance between the positioning face of the block at the rear of the cleat and the rear face of the space block at the shoulder of the cleat at the advance end of the cleat. That distance is approximately 1/32 of an inch. That clearance is provided for two purposes, so that cleats can be easily assembled in the machine, and so that the blank can be easily removed from the machine.

[fol. 1028] In Plaintiffs' Exhibit No. 38, Fig. 2, when the cleat is positioned against the space block at the rear of the cleat, that cleat cannot move forward more than the clearance allows, which is approximately 1/32 of an inch, and in Fig. 1 in Plaintiffs' Exhibit No. 38, with the shoulder of the cleat positioned against the space block at the rear of the cleat, that cleat cannot move forward more than the clearance allows, which is approximately 1/32 of an inch.

I call those blocks shown in red in Plaintiffs' Exhibit 38 space blocks, because they space the cleats apart endwise in a predetermined position.

In Fig. 1 of Plaintiffs' Exhibit 38, there is no dimension given of the length fore and aft of the space block measuring from the front positioning face to the face directly behind it, but assuming that quarter inch side sheets are to be used and these blocks were the proper blocks to use when quarter inch side material is to be used, the distance from the positioning face of these space blocks to the rear face of these space blocks is the length of the tongue of the cleat plus the thickness of the sheet material used, plus the thickness of the fin, and using standard cleats this distance of the space block from the positioning face of the space block to the rear of the space block would be 1-3/16 inches. This dimension is arrived at by taking the length of the tongue of the standard cleat which is 7/8 inches, plus the thickness of the side sheet material which

is ¼ of an inch, plus the thickness of the fin which is 1/16 of an inch.

X Q. 310. As far as you know, plaintiffs' licensees when employing the general method shown in Figs. 1 and 2 of Plaintiffs' Exhibit 38, always made these space blocks in a manner shown in said exhibit, did they?

A. Since tongue and groove cleats began to be used in the plaintiffs' machine in making wirebound boxes, they have made blocks and do make blocks at the present time the same in construction and dimensions as is shown in Plaintiffs' Exhibit No. 38, Figs. 1 and 2.

X Q. 311. What would happen in case the rear face of the space blocks shown in Figs. 1 and 2 of Plaintiffs' Exhibit 38 should be cut away for ⅜ or ½ inch and the cleat feeder should carelessly position the cleat with its front end in contact with the space block in front?

A. You would have an improperly made blank.

X Q. 312. Suppose in defendant's machine as shown in the stipulated drawings Plaintiffs' Exhibits 28 and 29, the cleat feeder should carelessly position the cleat in the cleat guide six or seven thirty-seconds of an inch forward from [fol. 1029] the position of contact with the pusher finger at the rear end, would not the frictional retardation of the cleat in the guide immediately correct the error due to the fact that the cleat would stand still in the guide and the finger would in due course move up into contact with the shoulder of the cleat?

A. On the defendant's machine with a step-by-step feeding mechanism the front face of the positioning block would engage the shoulder of the cleat at every step forward of the chains, but when the chains were at rest the shoulder of the cleats would be away from the positioning face of the space block except at the time when the detent would properly function and hold the shoulder at the rear end of the cleat against the positioning face of the space block by spring pressure just prior to and at the time that the first staple was driven in the groove end of the cleat.

I say that when the chains were at rest the shoulder of the cleats would be away from the positioning face of the space block or finger, except when the detents were in action, because in the forward motion of the space blocks in a step-by-step jerky motion, the positioning faces of these

space blocks would strike the shoulder of the cleat with a bang that would force the cleats forward so the shoulder of the cleat would not engage the space block at the rear of the cleat, and I am sure that in at least nearly every instance the shoulders would not be in contact with the positioning face of the blocks at the rear of the cleats when the chains were at rest, except at the time that I have stated in a previous answer. It might be termed as the momentum of the cleat that would cause this over-travel of the cleat after the positioning blocks had stopped.

X Q. 315. And in the plaintiffs' machine this over-travel of the cleat is prevented by the space block, is that correct?

A. The over-travel of the cleat in the plaintiffs' machine is just the same as it is in defendant's machine, with the exception that the cleats in plaintiffs' machine has approximately 1/32 of an inch endwise motion and the cleats in the defendant's machine have approximately ½ inch endwise motion.

On plaintiffs' machine the 1/32 inch endwise movement of the cleat between its spacer block at the rear of the cleat and the rear face of the spacer block at the advance end of the cleat is within the range of tolerance and would not spoil the blank, and in the defendant's machine the endwise clearance of the cleat does not spoil the blank be- [fol. 1030] cause just prior to the time of driving staples in this cleat this error of the endwise motion was fixed by the detent pressing against the forward or groove end of the cleat.

X Q. 317. Then it is proper to say, isn't it, that in plaintiffs' machine the cleats are held in correct position within a range of tolerance by the spacer blocks which do not permit more than a thirty-second of an inch longitudinal play of the cleat whereas in defendant's machine the cleat pushers permit approximately half an inch longitudinal play of the cleats but at about the last moment, before stapling, the machine automatically makes a correction and holds the cleat in correct position with its rear shoulder in contact with the positioning surface of the pusher. Is there anything incorrect about that statement?

A. In the plaintiffs' machine as the cleats pass under the stapling point the cleat so to speak is held in a pocket and has 1/32 of an inch clearance only, and prior to and at

the time of stapling, cleats of the defendant's machine is held in a pocket likewise by the functioning of the detent at the front end of the cleat, and the spacer block at the rear end of the cleat.

X Q. 318. Your answer does not point out anything incorrect about the statement of operation contained in the question, does it? If so, please point out wherein my statement of the facts was incorrect?

A. Your statement as I see it does not point out anything incorrect.

In the plaintiffs' machine, the "pocket" I speak of for holding the cleat is the distance between the front face of the spacer block at the rear of the cleat to the rear face of the block in the advance end of the cleat.

X Q. 320. Properly speaking a "pocket" cannot be a distance. It is true, isn't it, that in plaintiffs' machine the cleat is held in a pocket the bottom of which is formed by the feed chain on which the cleat rests and is carried, and by the spacer blocks fastened to the feed chain or carrier chain at such distances as to receive the cleat between them with a clearance of about one thirty-second of an inch. I may say, Mr. Steele, that while we all want your answers to correctly reflect what you have in mind and your opinions, nevertheless, any time that you can give a yes or no answer I would be glad to have it, as it will expedite the cross-examination.

By Mr. Laughlin: As the questions are assuming more or less of an argumentative character, it is manifestly dif- [fol. 1031] ficult to give a bare yes and no answer, but the witness is requested to give such an answer if he is entirely in accord with the language employed by defendant's counsel. Plaintiffs' counsel does not desire to interfere with legitimate cross-examination concerning plaintiffs' commercial machine within the scope of the direct examination but the present line of questioning is objected to as immaterial, and irrelevant because concerned with a comparison of plaintiffs' commercial machine on the one hand and defendant's machine on the other hand instead of a comparison of the machines and method of the patents in suit on the one hand and defendant's machine and method on the other hand which is, of course, the real issue.

By Mr. Cox: Plaintiffs' counsel is asked whether he is willing to strike out of this witness' testimony as immaterial and irrelevant all references to plaintiffs' commercial machines and method?

By Mr. Laughlin: Plaintiffs' counsel will not agree to striking out any testimony adduced in the present proceeding. The testimony regarding the development of plaintiffs' commercial practices is rendered highly competent by the fact that defendant presumes to claim some novel advantage or differentiation on the part of defendant's machine by the fact that the cleat positioning fingers on the spacing blocks engage the shoulders of the cleats rather than the ends of the tongues. Present testimony concerning plaintiffs' commercial practices covering the past eight or ten years establishes that defendant's theory (which formed the basis of a patent application filed August 3, 1925) is purely fictitious and without basis in fact.

By Mr. Cox: Plaintiffs' counsel rule seems to be that all direct testimony is relevant and almost everything on cross-examination is irrelevant. These cross questions have all been based on exactly the same drawings and subject-matter that were inquired about on direct, but it is thought that better progress will be made if the witness is permitted to do a greater proportion of the answering. Plaintiffs' Exhibit 38 manifestly shows nothing but matter pertaining to plaintiffs' commercial machines and methods and by plaintiffs' counsel's own statement just made, Plaintiffs' Exhibit 38 and all the pages of testimony relating to it are incompetent and irrelevant. If there are no further objections it is requested that the witness an- [fol. 1032] swer the question already put.

By Mr. Laughlin: Plaintiffs' counsel did not object in the least to cross-examination relative to Plaintiffs' Exhibit 38 and the testimony concerned therewith. It is to be noted that the question at present remaining unanswered is not objected to specifically but merely the line of questioning which attempts a comparison of plaintiffs' present commercial machine and the machine of defendant as immaterial and irrelevant.

By Mr. Cox: The witness on direct testified as to the present day practice of the McPherson and Foster Company of Evansville, Indiana, a licensee of plaintiff there-

fore, applying the rule just annunciated by plaintiffs' counsel that testimony was irrelevant and immaterial and is now objected to for that reason.

By Mr. Laughlin: The present objection comes too late to avail defendant and it is believed the competency of the testimony referred to has been explained sufficiently.

By Mr. Cox: Plaintiffs' Exhibit 38 was duly objected to.

A. To more fully explain what I meant by pocket to hold the cleat at the time the cleat is being stapled, this pocket is formed by the bottom of the feed chain upon which the cleat rests and the distance between two side walls which is 1 16 farther apart than the dimensions of the cleat and the positioning face of a space block at the rear of the cleat and the rear face of a space block at the advance end of the cleat, this distance being 1 32 inch greater than the length of the cleat. These cleats are fed forward under the stapling point by a space block at the rear of the cleat.

In the plaintiffs' machine, these space blocks are fastened to the chain and feed the box parts forward under the stapling point, and the feed chains carry the cleats during this operation.

X Q. 323. And in the defendant's so-called third method the cleats are supported and guided by stationary guides and are pushed forward in these guides by pushers which are fastened to the feed chains; isn't that true?

A. In the defendant's machine the cleats are placed in stationary channels, are guided partially by the walls of these channels and also partially guided by the positioning block at the rear of the cleats, and the cleats are posi-[fol. 1033] tioned and fed forward by the space block at the rear of the cleat.

X Q. 324. Mr. Steele, I do not consider the last answer an honest one. I asked you whether it wasn't true that in the defendant's so-called third method the cleats are supported and guided by stationary guides and are pushed forward in these guides by pushers which are fastened to the feed chain, and you replied that the cleats are guided partially by the walls and partially by the positioning blocks. You have made no mention of the bottom of the guides which, of course, does just as much guiding as the side walls and you have apparently stated that it is your opinion that the pusher block or spacer block is a guide.

I wish you would reread the question and answer, because I want to give you an opportunity to make a straight and honest answer to my question if you want to do it?

By Mr. Laughlin: The reflection on the answer of the witness is entirely unwarranted and if not literally responsive apparently is because the witness supplied certain details of description that defendant's counsel omitted.

A. I will further say that not intentionally, I may have not fully explained the channels in which these cleats are fed. These cleats rest on the bottom of this channel so that they can be fed forward under the stapling point to an exact height to receive the staple.

It is not true that in defendant's so-called third method the cleats are supported and guided by stationary guides or channels and are pushed forward in these guides or channels by pushers fastened to the feed chains. These cleats are supported and guided by stationary guides and by space blocks at the rear of the cleats. These space blocks are fastened to the feed chain with a positioning portion of these blocks extending into the path of the cleats. I am giving it as my opinion that the pusher blocks are part of the guiding means in defendant's third method.

X Q. 327. In the stipulated drawing of defendant's machine, Plaintiffs' Exhibit 28, clearance is shown between the side of the cleat tongue and the pusher block, isn't there? Please refer, for example, to Fig. 5 of this exhibit.

By Mr. Laughlin: It is noted that Figs. 1 and 4 of this exhibit show no clearance at this point and neither does the [fol. 1034] Craig patent 1,565,909 (which Mr. McElroy has testified accurately represents defendant's construction) show a clearance at this point. However, this matter has been explained in previous testimony.

A. In Plaintiffs' Exhibit No. 28, Fig. 5, there is a slight clearance shown in these drawings between the outside face of a cleat positioning finger and the inner face of the tongue. In Fig. 1 of the same drawing this clearance is not shown. However, it is a fact that in making blanks on the defendant's machine as shown in Plaintiffs' Exhibit No. 28 when the outer edges of the cleat positioning finger did not engage the side of the cleat tongues, these cleats were pressed

against the inner wall of the stationary channel and this would allow the sheet material to project beyond the cleat edges approximately 1/16 of an inch and this happening at each end of each section would make this blank when folded into box form 1/8 inch smaller in length than the desired dimension.

X Q. 328. What presses the cleats against the inner wall of the stationary channel?

A. If the outer face of the cleat positioning finger on the space block were so short that it would not engage the inner face of the tongue of the cleat the detent would press the cleat against the inner wall of the channel.

By Mr. Laughlin: To avoid possible confusion, it is noted that X Qs. 315 to 322, both inclusive, and the answers thereto, relate to plaintiffs' present commercial machine.

X Q. 329. What harm would that do?

A. If the cleats were forced against the face of the inner wall of the channel the ends of the sheet material would protrude beyond the sheet edges approximately 1/16 of an inch.

X Q. 330. That is exactly what happens in the plaintiffs' machine, isn't it, because you have testified that the cleats are given a side clearance or play of a sixteenth of an inch in plaintiffs' commercial practice?

A. In the plaintiffs' commercial machine using tongue and groove cleats there isn't anything that forces the cleats sideways against the inner faces of the walls of the chain.

X Q. 331. Then the cleat is just as apt to be a sixteenth of an inch out of the way as it is to be right; is that it?

A. The cleats can shift sideways the clearance that is allowed, which is approximately 1/16 of an inch.

X Q. 332. Then why do you attach so much importance [fol. 1035] to a possible sidewise misplacement of the cleat of 1/16 of an inch in the defendants' machine method and product when you treat it as negligible in the plaintiffs' commercial machine?

A. Because on defendant's machine in my judgment from what I have observed in their machine that the outer wall of the positioning finger of the space block holds the cleat from being pressed against the inside wall of the channel at the rear end of the cleat. However, in every instance on

each and every cleat the advance or groove end of the cleat on the defendant's machine are pushed against the side faces of the inner wall of the channel and I have been told by the mechanic who installs the defendant's machine that this error has been corrected by placing the detent to press against the inner side of the cleats instead of the outer side of the cleats. I also observed this change at that time.

By Mr. Cox: The hearsay portion of the answer is objected to on that ground.

X Q. 333. All of which answer is totally unresponsive. I asked you why you attach so much importance to a possible sixteenth of an inch variation sidewise of the position of the cleat in defendant's product and treat it as negligible in plaintiffs' product? I repeat the question.

By Mr. Laughlin: It is apparent that the answer is as responsive as possible in view of the character of the question, and the question is objected to as incompetent, immaterial and irrelevant.

A. In making blanks on the defendant's machine as shown in Plaintiffs' Exhibit No. 28, Fig. 1, it is a fact that at least the forward or grooved end of the cleats is always pressed against the inner wall of the channel. This makes a defective box in appearance and the Saranac Automatic Machine Corporation has thought this was serious enough and was of enough importance to change their machine so that the detent would force the cleat against the inner faces of the outside wall of the channel and by doing this, would hold the outer faces of the cleat flush with the end of the sheet material.

By Mr. Laughlin: The witness is reminded that the construction of defendant's third machine has been stipulated between counsel and is represented in the drawings, Plaintiffs' Exhibits 28 and 29, and he is, therefore, requested to confine his testimony to facts relating to the stipulated con- [fol. 1036] struction and matters necessarily connected therewith. It is true that the present record contains proof of a machine produced by defendant, having the detent on the inside of the cleat channel, which machine was referred to as the "first White machine" and is shown in Plaintiffs' Exhibit No. 17, facing page 103.

X Q. 334. But you still carefully omit any criticism of plaintiffs' commercial product in spite of the fact that you have testified that the cleat carrying chains permit of a sidewise play of the cleat of a sixteenth of an inch. Apparently you regard a sixteenth of an inch lateral displacement of the cleat as of much more importance in defendant's product than in the product of plaintiffs' licensees; isn't that so?

A. In plaintiffs' machine in using tongue and groove cleats there is approximately a sixteenth of an inch clearance sideways of the cleat. In actual manufacturing I couldn't think of an instance when all the cleats would be against the inner faces of the inside wall of the chain or the outside faces of the cleat against the inside faces of the outer wall of the chain and to my knowledge the plaintiffs have never felt that it was necessary to lessen this cleat clearance. But on the defendant's machine prior to and at the time the staples are being driven the cleats are held firmly at both ends of the section against the faces of the inner wall of the channel and the forward or groove ends of these cleats are always in each and every instance 1/8 inch closer together than desired.

A sixteenth of an inch displacement of a cleat is not any more important in defendant's product than in plaintiffs' product. In plaintiffs' machine, using the tongue and groove cleats, very rarely if ever are both cleats of the same section moved inwardly against the inner walls of the chain and if only one cleat is misplaced a sixteenth of an inch the box is not impaired by its inside dimension. As a matter of fact in making boxes commercially on the defendant's machine each and every cleat at the groove end of the cleat is pressed in beyond the ends of the sheet material 1/16 of an inch at each end of that section and this doesn't happen in making boxes commercially on the plaintiffs' machine using tongue and groove cleats.

X Q. 337. Then if you wanted to say something favorable about the defendant's product, which evidently you do not, you could say at least that in defendant's product the cleats are uniformly positioned sidewise, whereas in plaintiffs' product the cleats may come right or they may come wrong [fol. 1037] a sixteenth of an inch or they may be right at one end and one-sixteenth wrong at the other end and the position depends purely upon accident, the staples being driven

into the cleat at whatever position the cleat happens to be sidewise: isn't that true?

By Mr. Laughlin: The question is objected to as immaterial, irrelevant and incompetent inasmuch as it deals with a comparison of plaintiffs' present manufacture and defendant's manufacture which is immaterial on the question of infringement.

A. I may say that in making blanks with the proper overlap on the defendant's machine the cleats are fed under the stapling points by space blocks and held in a predetermined position with the shoulders of the cleats against the faces of the positioning blocks by the detent, and when this blank is stapled the cleats are in a foldable relation. And in making blanks on the plantiffs' machine using tongue and groove cleats with the proper overlap the blank is foldable and in each of these cases the boxes made from these blanks can be and are used commercially.

X Q. 338. Was there anything incorrect about my statement that in the defendant's product the cleats come to a uniform position whereas in the plaintiffs' product they may vary a sixteenth of an inch sidewise and that the sidewise position of the cleat within a sixteenth of an inch depends upon accident?

By Mr. Laughlin: Will defendant's counsel agree that plaintiff's objection to the present line of testimony relating to a comparison of plaintiffs' present commercial practices and defendant's practices, as immaterial, irrelevant and incompetent on the infringement issue for the reasons before stated, may be understood as having been repeated against each question along this line?

By Mr. Cox: This may be understood.

A. I may say that in the plaintiffs' machine the tongue and groove cleats by accident may move sideways 1/16 of an inch and in the defendant's machine as shown in Plaintiffs' Exhibit No. 28 they are always positioned at the groove end of the cleats with the inner faces of the cleat against the faces of the inside walls of the channels.

X Q. 339. Can you as a mechanic imagine anything simpler, assuming that the inside walls of the cleat channels are so positioned as to cause the cleats to uniformly come [fol. 1038] a sixteenth of an inch in from the end of the side

sheet than to move the guide channels outward one-sixteenth of an inch?

A. Suppose that you were to move your guide channels outward 1/16 of an inch, the outer wall of the channel which position the ends of the sheet material would not properly position the ends of the sheet material relative to the outer faces of the cleats.

X Q. 340. If it were true as you have testified, that the pusher blocks have a guiding function as well as a pushing function, why do not they remedy the alleged lateral misplacement of the cleats in defendant's machine as shown in Exhibit No. 28?

A. Because the outer faces of the positioning blocks only come in contact with the inner face of the tongue of the cleat at the rear of the cleat and the detent forces the groove end of the cleat against the inner wall of the channel.

X Q. 341. Now as a matter of fact, Mr. Steele, you know, don't you, that in defendant's third method the pusher blocks do not perform any guiding function but are purely and simply pushers? There are at least two reasons for this which I shall have to bring out unless you are willing to make a correct answer.

A. I do know the fact that in watching the defendant's machine shown in Plaintiffs' Exhibit No. 28 as operated in a factory making wirebound boxes, that frequently the cleat feeder finds it necessary to turn the cleat over with bottom side up in order to get the tongues of the cleats past the outer portion of the cleat positioning finger. It is also a fact that space blocks shown in Plaintiffs' Exhibit No. 28 feed the cleats forward and position the ends of the cleats relative to their adjacent cleat ends as they pass under the stapling point.

X Q. 342. If the positioning fingers were guides as well as pushers, why don't they hold the cleats in correct position sidewise?

A. When the outer faces of the cleat positioning fingers were against the inside faces of the tongues this outside face of the cleat positioning finger would hold the cleats so that the inside face of the cleat would not come in contact with the inner face of the inside wall of the channel, but this only can occur at the tongue end of the cleat and the groove end of the cleat is forced in the opposite direction from which

the tongue end of the cleat is held by the outer faces of the cleat positioning finger. According to my theory it is only the groove end of the cleat that is misplaced a sixteenth [fol. 1039] of an inch (by the detent) and the tongue end of the cleat is held in correct position sideways by the positioning finger.

X Q. 344. I think you have overlooked a little point. Do you not observe that there is very pronounced clearance between the sides of the feed chains and the feed chains' channel or guide in the defendant's third machine?

A. I am sure that the springs that are employed to operate the detent on the defendant's machine as I observed them would not be strong enough to force the cleats sideways in the channel and also force the feed chains and keep them against the inner walls of the channels of the feed chains when these chains are fed forward by having their power furnished at the opposite side of the stapling point from which the cleats were orginally fed. I may also add that if this feed chain has that much clearance as would be required the cleat feeder would have more difficulty in getting the tongue end of the cleats between the outer walls of the channel and the outer faces of the cleat positioning fingers at the rear of the machine, which is approximately ten feet at the rear of the stapling point.

X Q. 345. Then it is your theory, is it, that the feed chains maintain their positions sideways and do not vary them a sixteenth of an inch?

A. I wouldn't say that the feed chains did not vary in their forward travel, but these feed chains are heavy, the space blocks are also heavy and with the detent close to where the power is applied to feed these chains I am sure that this detent, as I have observed it, would not force the feed chains against the inner wall of the feed chain channel.

X Q. 346. Then you are going to stick to your theory that in defendant's machine the pushers act as guides as well as pushers and that the groove end of the cleat always comes about a sixteenth too far in from the end of the sheet material and that the pushers hold the tongue end of the cleat about a sixteenth of an inch farther out—that is, substantially flush with the end of the side sheet material?

A. I will still say that if the tongues of the cleats are properly made the outer faces of the cleat positioning fingers will hold the outer faces of the cleat at the tongue end of the cleat substantially even with the ends of the sheet edges.

X Q. 347. Then according to your understanding the worst that can be said of defendant's product is that when the machine is operating normally the rear end of the cleat [fol. 1040] will be properly positioned laterally and the forward end may be a sixteenth of an inch too far in?

A. The front or grooved end of the cleats when making blanks on the defendant's machine will be positioned too far in and the outside faces of the cleats at the tongue end of the cleats will be substantially even with the sheet ends at the rear end of the cleat. However, the blanks made on the defendant's machine as shown in Plaintiffs' Exhibits Nos. 28 and 29 are foldable and when the proper overlap is used would have the proper tensioning and binding wires at the corner and boxes made from these blanks would be salable and usable.

X Q. 348. If the pusher blocks used in defendant's third method were made a little narrower so as not to engage the side of the cleat tongue, the blocks would then act merely as pushers and the guiding of the cleats would be performed entirely by the channel, is not that true?

By Mr. Laughlin: Objected to as purely speculative and assuming a construction of defendant's machine contrary to the construction stipulated and in actual use, and as immaterial, irrelevant and incompetent.

A. Assuming in defendant's machine that the outer faces of the cleats were placed against the outside wall of the channel and there was 1/16 of an inch clearance between the outer faces of the cleat positioning finger and the inner faces of the tongue of the cleat, in this instance the cleat positioning fingers would not serve as a guide to said cleat, but the front faces of the cleat positioning fingers against the shoulder of the cleat would still position these cleat ends a predetermined dimension from their adjacent cleat ends.

I have testified that in defendant's machine the cleats would jump ahead in the cleat guides and leave the pusher fingers, owing to the intermittent motion of the feed chain.

The friction of the cleats in the guide channels would not be sufficient to prevent this.

X Q. 350. Couldn't a sufficient friction be readily obtained by providing one or more flat springs on the inner wall of the guide channel?

By Mr. Laughlin: The question is objected to as indefinite, speculative and contrary to defendant's practices. If defendant's counsel wishes to ask hypothetical questions, without reference to drawings, he should make his [fol. 1041] description complete and in the present question he is requested to state where the assumed springs are to be placed.

By Mr. Cox: I think the question is plain enough for the witness to understand it.

By Mr. Laughlin: Defendant's counsel is requested to stated whether the assumed springs are merely to prevent relative movement of the cleats out of engagement with the blocks at their rear or are to perform a similar function and in addition function to perpetuate the relative positions of the cleats.

By Mr. Cox: The witness may assume that the springs are for the purpose of creating frictional retardation of the cleats in their guides for preventing cleats from jumping ahead out of contact with the pusher fingers.

By Mr. Laughlin: Apparently defendant's counsel declines to make the hypothetical arrangement sufficiently definite. As defendant's counsel well knows, placing of a spring at one point along defendant's channels will not perform the identical function that it would if placed at at another point, and he is requested to make his hypothetical question definite in this respect.

By Mr. Cox: A retarding spring as described in the question would function the same regardless of what position along the channel it was placed, but if the witness thinks differently, let him do the best he can in making his answer and assume the spring to be at various positions along the channel.

By Mr. Laughlin: It is not agreed that the spring would function the same regardless where placed, but inasmuch as defendant's counsel declines to specify a location for the supposed spring, the witness is requested to answer.

A. I can assume a spring placed in the cleat channels to function between the wall of the channel and the side of the cleat with frictional engagement. However at this moment I cannot see any way to place a spring between the cleat and the wall of the channel when there is only 1/16 of an inch clearance between the sides of the cleats and the walls of the cleat channel, but could this be done in making blanks on this machine after the assumed changes were made, it would be necessary for these springs to properly function on the cleat to be stapled just prior to and at the time the staples were driven in that cleat.

[fol. 1042] I have testified that defendant's machine has a pocket which holds the cleat.

This so-called pocket I spoke of in defendant's machine is formed just prior to the time the first staple is driven in the cleat by the detent at the front end of the cleat holding the shoulder of the tongue at the rear of the cleat against the face of the spacer block at the rear of the cleat. This cleat of course resting in the cleat channels.

X Q. 353. Then you want the court to understand that it is your belief that defendant's machine has a pocket one end of which is formed by the detent which never travels endwise of the channels, and the pusher block which is a traveling element?

A. It is a fact that just prior to the time the cleat is to be stapled the shoulder on the tongue end of the cleat is held against the front face of the space block at the rear of the cleat by the detent which engages the extreme groove end of the cleat, thus forming the so-called pocket between the positioning face of the space block at the rear of the cleat and the part of the detent that engages the extreme groove end of the cleat. Of course, this cleat being in the cleat channels.

X Q. 354. Yes, we all understand the operation of the machine, but the question is whether, as an expert mechanic, you are willing to designate the construction as a "pocket" for the purpose of forcing a comparison between defendant's machine and plaintiffs' workholder patent? Do you still wish to employ the term "pocket" to describe the parts you have mentioned in defendant's machine?

A. I have used this work "pocket" to designate the sim-

ilarity of the plaintiffs' commercial machine using tongue and groove cleats and of the defendant's commercial machine just prior to the stapling operation.

But at the time of the stapling of the cleats on the defendant's machine the detent which functions against the outside of the cleat serves exactly the same function as the springs 15 of the patent in suit by frictional engagement.

X Q. 355. I did not ask anything about plaintiffs' commercial machine. I would be glad if you would reread the question and answer it.

By Mr. Laughlin: Objection repeated. There is no basis for the statement that the witness is "forcing a comparison."

By Mr. Cox: To give the name of "pocket" to elements [fol. 1043] one of which is traveling and the other of which is stationary is, of course, ridiculous and it is desired to know how far the witness will go to point out similarity between defendant's machine and plaintiffs' patent.

By Mr. Laughlin: This is purely a matter of argument. The witness has called it a "pocket" and explained why.

A. The term "pocket" as I have used it was used only to show comparison between plaintiffs' commercial machine using tongue and groove cleats and the defendant's commercial machine, and this term "pocket" was not used in the comparison of the plaintiffs' machine of the patent in suit and the defendant's commercial machine.

In defendant's machine the cleats can jump ahead of the pusher finger about $\frac{1}{2}$ inch, except at the time when the detent is engaged with the groove end of the cleat. If the cleat was moved forward a half inch from its positioning block at the rear of the cleat and the stapling operation was to take place while the cleat was away from the positioning block, the blank would be defective.

X Q. 358. Then the pusher blocks in defendant's machine do not of themselves space the cleats endwise accurately enough to make a commercial box blank; isn't that true?

A. The cleats in the defendant's machine are positioned with their rear shoulders against the faces of their positioning block, but as the feed chain moves forward in a step-by-step motion the shoulders of the cleats are not positioned against the positioning fingers at the rear of the

cleat when the chains are at rest except prior to or at the time when the stapling is taking place. At this time the detent holds the cleat firmly against the cleat positioning finger at the rear of the cleat.

X Q. 359. And the pusher blocks themselves have nothing to do with correcting the endwise position of the cleats in the blank; isn't that true? The block at the rear pushes, but the block at the forward end has no ability to correctly position the cleat endwise?

A. The purpose of the detent at the forward end of the cleat is to insure the cleat to be held with the shoulder at the tongue end of the cleat against the positioning face of the blocks at the rear of the cleat. This will insure the space blocks at the rear of the cleat to space the cleat to a predetermined position.

It is correct in a sense that in defendant's machine there [fol. 1044] is nothing but the so-called detent to insure the contacting of the rear shoulder of the cleat against the pusher block at the rear of the cleat. To make it more plain I will say that the detent is the only thing in the channel that holds the shoulder of the cleat against the cleat positioning fingers at the rear of the cleat prior to and at the time the cleat is being stapled.

X Q. 361. Then in the defendant's so-called third method the correct spacing of the cleats endwise cannot be controlled by the pusher blocks without the aid of some additional instrumentality; isn't that true?

A. In the so-called third method of defendant's machine the cleat positioning finger at the rear of the shoulders of the cleats is the only cleat positioning member that is incorporated on the defendant's machine. To insure this proper spacing that is determined by the space block at the rear of the cleat a detent which functions on the front end of the cleat insures the positioning of the cleat that is determined by the space block at the rear of the cleat.

X Q. 362. If in defendant's machine the detents were omitted would the cleats be properly spaced endwise, everything else remaining the same?

A. In the defendant's machine if the space blocks were adjusted on the feed chains so as to properly position the cleats to make a foldable blank and the detent was then

omitted from this machine you would have a defective blank.

The detent in defendant's machine is essential in making blanks on a machine as shown in Plaintiffs' Exhibit No. 28 where the cleats have approximately $\frac{1}{2}$ inch endwise displacement between the positioning faces at the rear of the cleat and the rear face of the block at the front end of the cleat.

In plaintiffs' workholder patent the block 7 actually separates the cleats and holds them positively and accurately spaced endwise except for the permissable clearance of about 1 32 of an inch.

X Q. 365. And the work is not only correctly spaced, but is supported solely by and fed forward solely by the movable workholder; isn't that true?

[Counsel explains that by "work" is meant the sheets and cleats.]

A. The cleats and sheets when assembled in the workholder of the patent in suit and the cleats properly positioned with the rear end of the cleats against the forward faces of the space blocks, the cleats are then fed forward [fol. 1045] under the stapling head by the space blocks at the rear of the cleats. These cleats are supported by the bottoms of the channels and each section is fed forward in a step-by-step motion by the space blocks at the rear of the cleats.

X Q. 367. In plaintiff's workholder patent the space blocks do all the endwise spacing of the cleats that is done, don't they?

A. In the plaintiffs' workholder of the patent in suit the front faces of the space block determines the position of the cleat ends.

X Q. 368. Of course this is directly opposite to your previous testimony in which you have said that in plaintiffs' workholder of the patent in suit if the rear side of a space block were cut away in front of a cleat an imperfect and non-foldable blank would be produced. And you have also referred to "pockets" in the plaintiffs' workholder patent which term, of course, implies something that will prevent motion in any direction except the one which will withdraw the article from the "pocket" and now you say that it is

only the space block to the rear of a cleat which has anything to do with the endwise spacing of a cleat. Which of these theories do you want the court to adopt as your view of the matter?

By the Examiner: The witness has left the room at the request of defendant's counsel during the entry of plaintiffs' counsel's remarks.

By Mr. Laughlin: It is believed that defendant's counsel is in error in stating that this witness in his previous testimony said that "in plaintiff's workholder of the patent in suit if the rear side of a space block were cut away in front of a cleat, an imperfect and non-foldable blank would be produced." On the contrary, the testimony of the witness was the exact opposite and for convenient reference I quote questions 252, 253 and 254, and the answers thereto.

"Q. 252. Please refer to the workholder patent in suit, 1,128,144, and observe particularly Fig. 1 and Fig. 7. Assume that the rear half of each spacer block of the first, second, third and fourth pairs (counting from the top of Fig. 1) is completely cut away so that when cleats are positioned in the workholder with their rear ends against the front faces of the spacer block, there would be a clearance of $\frac{1}{4}$ inch or more between the advance end of each cleat and the adjacent spacer block. If cleats were now inserted in this modified workholder, each cleat being positioned against [fol. 1046] its rear spacer block, and being engaged by the spring 15; would this workholder or would it not be an efficient workholder to be fed through the stapling machine for wiring the blank sections assembled thereon?

"A. It would be an efficient workholder and when the wires were stapled to the blank it would be a foldable blank.

"Q. 253. What would hold the cleats properly positioned with their rear ends against their rear spacer blocks?

"A. Spring 15.

"Q. 254. State whether or not the spring 15 would hold each cleat properly positioned against its rear spacer, in spite of an intermittent feeding motion of the workholder under the staple head?

"A. They would."

The questions and answers immediately following the above-quoted testimony relate to the same general subject-

matter. Defendant's counsel is invited to point out in the record the testimony that he had reference to.

By Mr. Cox: The witness in answering may assume that the cleat feeder has carelessly misplaced the cleat endways in the "pocket" of the workholder.

By Mr. Laughlin: Then the testimony referred to by defendant's counsel took into consideration an improper assembling operation by the cleat layer; is that correct?

By Mr. Cox: Yes.

A. In the course of this testimony I have testified and will testify again that in the plaintiff's machine of the patent in suit if the rear sides of the space blocks at the front of the cleat were cut away and the rear end of the cleats were positioned against the front faces of the space block at the rear of the cleat, and if binding wires were stapled to these cleats, these cleats would be positioned in a foldable relation. I have also referred to "pockets" pertaining to the plaintiffs' commercial machine in using tongue and groove cleats and to the defendant's commercial machine, and I will state now, as I have stated before, that the front faces of the space block of the plaintiffs' machine of the patent in suit is the only part of the machine that spaces cleats relative to their cleat ends, and in the defendant's machine the only part of their machine that positions cleats is the cleat positioning finger that engages the shoulder at [fol. 1047] the tongue end of the cleat.

By Mr. Cox: Objected to as not responsive and volunteered, the question containing nothing about defendant's machine.

By Mr. Laughlin: Inasmuch as the question was predicated upon an erroneous statement by defendant's counsel, it was obviously confusing, but it is quite apparent that the witness gave as accurate an answer as the confusing and argumentative nature of the question would permit.

X Q. 369. Is there anything in the workholder patent in suit other than the space blocks for preventing the adjacent ends of two cleats from coming too close together?

A. In the plaintiffs' patent in suit when the rear end of the cleats are placed against the spacer block at the rear of the cleat the spring 15 will hold this cleat from endwise displacement.

The spring 15 does not prevent the cleat layer from misplacing the cleat endwise; the cleat layer could misplace the cleat endwise the distance of the clearance allowed at the front end of the cleat, which is a thirty-second of an inch.

X Q. 372. How much importance do you attach to this one thirty-second of an inch?

By. Mr. Laughlin: The question is objected to as vague and indefinite. In what connection does defendant's counsel use the word "importance"?

By Mr. Cox: In connection with the endwise placement of the cleats. The witness has already testified that a variation of 1/32 of an inch lengthwise in the position of the cleat makes no difference in the salability or usefulness of the finished blank and the only time that the witness attaches any importance to this 1/32 is when he uses it to avoid making the obvious admission that in plaintiffs' patented workholder and method there is nothing but the space blocks to prevent the adjacent ends of the cleats from coming too close together. The plaintiffs' patented method is purely a spacer block method and the witness is well aware of it, but for some reason best known to himself apparently doesn't want to admit it.

By Mr. Laughlin: It was hardly expected that the request to make the question more definite would be met by the foregoing argument. It is not a fact, of course, as defendant's counsel contends, that in the patents in suit [fol. 1048] "there is nothing but the space blocks to prevent the adjacent ends of the cleats from coming too close together," but to the contrary, as admitted by defendant's patent expert, Mr. McElroy, the springs 15 of the workholder patent in suit would be effective to prevent this very thing. Defendant's counsel is referred to defendant's record, page 411. The phrase "spacer block method" is merely a generic descriptive name coined by defendant's counsel in an attempt to distinguish defendant's practices, whereas the real substance of this matter is the adoption by defendant of the inventive subject-matter of the patents in suit.

A. In the workholder patent in suit it is necessary to have the positioning faces of the space block at the rear of the cleat and the rear faces of the space blocks at the front end of the cleat adjusted to allow endwise clearance of the cleat as it would be impossible for a cleat feeder to feed cleats in

the workholder if the distance between the positioning face of the space block at the rear of the cleat and the rear face of the space block at the advance end of the cleat was the exact length of the cleat.

XQ. 373. Spring or no spring, the spacer blocks in the plaintiffs' patented method prevent the cleats from coming too close together at their adjacent ends, don't they? By too close I mean too close to make a salable foldable blank.

A. It would be impossible to make foldable blanks on the machine of the patent in suit if the springs 15 were omitted, and when blanks are made in this workholder using the springs which is necessary to make a foldable blank, if the cleats were misplaced in the channel the springs 15 would hold these cleats in relation to the space block at the rear of the cleat as to its exact misplacement, but should this cleat be misplaced with the front end of the cleat against the rear face of the block at the front end of the cleat the cleats on this blank would not be properly positioned but could be folded and the box could be used commercially. However at all times a cleat feeder is instructed to position the rear ends of the cleat against the positioning block at the rear of the cleat in order to insure a proper overlap in a properly foldable blank.

Defendant's machine as shown in the stipulated drawings has no spring like the springs 15 of plaintiffs' method and workholder patents in suit, but in Plaintiffs' Exhibit [fol. 1049] No. 28 there is a spring that causes the detent to function and this detent when functioned by the spring causes frictional engagement with the side of the cleat holding the rear end of the cleat against the positioning fingers at the rear of the cleat at the time the staples are being driven in that cleat, just the same that spring 15 of the plaintiffs' patent in suit causes frictional engagement against the side of the cleat and holds the cleat when positioned against the space block at the rear of the cleat at the time the staples are being driven in the cleat.

XQ. 376. In plaintiffs' method and workholder patent the spacer blocks come between the ends of adjacent cleats in such manner as to make it impossible for the cleat feeder to misplace the cleats endwise sufficiently to ruin the product, isn't that so?

A. In the workholder patent in suit the cleat feeders are instructed to place the cleats in the workholder with the

FIG 1.

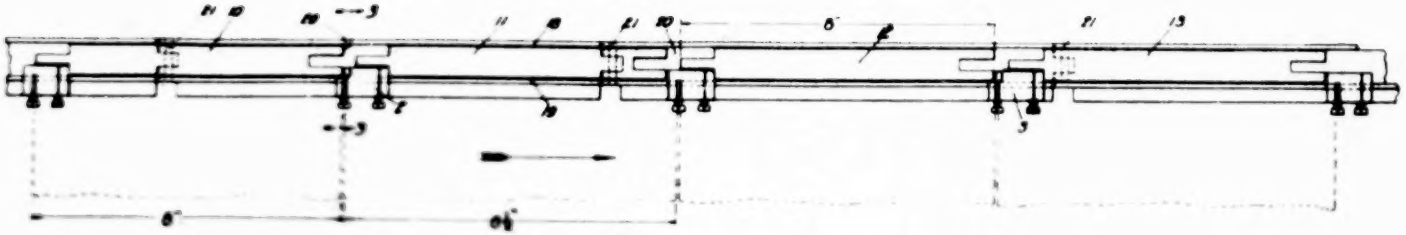
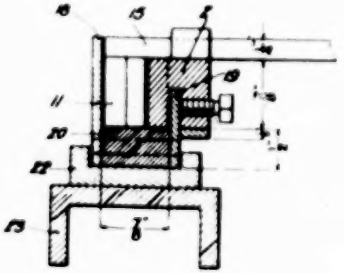


FIG 2

FIG 3



DEFENDANT'S CROSS EXHIBIT 100

PLAINTIFFS' EXHIBIT Nº 44

DIAGRAM OF PLAINTIFFS' EARLY MACHINE EMPLOYING POSTIONING BLOCKS WHICH ENGAGE CLEAT SHOULDERS

10491

rear end of the cleats against the space blocks at the rear end of the cleat but should this cleat feeder by mistake place the cleat in the workholder with the front end of the cleat against the rear face of the block at the front end of the cleat and wire are stapled to these cleats in this manner with one cleat misplaced endways 1 32 of an inch, this blank could be folded and could be used commercially.

In defendant's machine it is not necessary to instruct the cleat feeder to place the cleats with their rear end in contact with the pusher which advances it.

I have stated that we "have and are making boxes positioning the cleats from the shoulder of the cleat" and I introduced Plaintiffs' Exhibit No. 38 to show this. I also introduced Plaintiffs' Exhibit 39 as spacer block employed in this connection.

A few days ago I was requested by Mr. Cox to have a drawing prepared showing the associated parts which is the chain in order to make the Fig. 1 of Plaintiffs' Exhibit No. 38 complete. He also asked me to make a side view of this drawing and a cross section of the same drawing and this cross section to be shown at the rear of the cleat positioning fins. I have had this prepared and now produce it.

(Here follows Defendant's Cross Exhibit No. 100 (Plaintiffs' Exhibit No. 41) [fol. 10250].)

By Mr. Cox: The Examiner is requested to mark for identification the drawings just produced by the witness as Defendant's Cross Exhibit 100.

By Mr. Laughlin: Plaintiffs' counsel does not waive the right to object when and if the drawing is formally offered in evidence.

[fol. 10250] This drawing, Defendant's Cross Exhibit 100, represents a section of the left feed chain upon which the space blocks are assembled and upon which cleats are assembled on a plaintiffs' commercial machine showing the cleats are positioned from the shoulder of the tongue at the rear end of the cleat against the space block at the rear end of the cleat.

And this drawing represents the plaintiffs' type of machine that I was talking about when I answered Q. 92 and when I was testifying about Fig. 1 of Plaintiffs' Exhibit 38.

In this drawing, Defendant's Cross-Exhibit 100, Fig. 1 represents a plan view of part of the left chain of the plaintiffs' commercial machine showing the space blocks assembled on the chain and the cleats assembled in the chain. Fig. 2 is a part of a side elevation of Fig. 1. Fig. 3 is a cross section on the line 3—3 of Fig. 1. I have applied to the corresponding space blocks in Cross-Exhibit 100 the numerals 2 and 3 used to designate certain of the space blocks in Plaintiffs' Exhibit No. 38. In the cross-exhibit the parts shown in brown which I have marked 10, 11, 12 and 13 are cleats. The parts shown in yellow marked 14, 15 and 16 are side sheets. The part marked 18 is the outer wall of the feed chain. The part marked 19 is the inner wall of the feed chain. The part marked 20 is the bottom of the feed chain. The bottom of the feed chain upon which the cleats rest is made from sections of steel $\frac{1}{8}$ inch in thickness, $\frac{7}{8}$ inch in width and approximately 12 inches long. These sections are connected together with rivets; I have identified these rivets by applying the numerals 21 to them. In this Cross Exhibit 100, the part marked 22 is the top portion of the channel on which the feed chain rests. The part marked 23 is the bottom portion of the channel in which the feed chains rest.

The feed chains consist principally of the parts 18, 19, 20 which are respectively the outer wall, the inner wall and the bottom piece or link, which are connected by the hinge rivets 21. These chains move with an intermittent step-by-step motion.

In this drawing the cleats and sheets are substantially supported by the bottom sections of the feed chains.

When the space blocks are properly positioned on the chain as shown in Defendant's Cross-Exhibit 100, the possible endwise movement of the cleat between the space block at the shoulder at the rear of the cleat and the block at the advance end of the cleat is approximately 1/32 inch. And the clearance or possible endwise move-[fol. 1051] ment of the cleats in the form of machine shown in Fig. 2 of Plaintiffs' Exhibit 38 is the same, that is, 1/32 of an inch.

Cross-examination closed.

[fol. 1050a] Plaintiffs' Exhibit No. 36 printed; omitted side page 992, ante.

[fol. 1050b] Plaintiffs' Exhibit No. 29 printed; omitted side page 992, ante.

Redirect examination.

By Mr. Laughlin:

The makes of cleat cutting machines with which I am familiar and with which I have come in contact in the plants of wirebound box manufacturers, including defendant's licensees, are known as Chase Turbine cleat machines, the Fay & Egan cleat machine and the Yates cleat machine.

I have testified that the construction and operation of the Chase Turbine cleat cutting machine is represented by the drawing, Plaintiffs' Exhibit No. 36, and the machine is illustrated and the operation described in the pamphlet, Plaintiffs' Exhibit No. 37. The construction and operation of the two trim saws 9 and 10 on Plaintiffs' Exhibit 36 are just the same as the trim saws on the Fay & Egan and Yates machines and are arranged on the Fay & Egan and Yates machines just in front of the grooving saws the same as the arrangement shown on Plaintiffs' Exhibit No. 36. There is not any opportunity for the cleats produced on the Fay & Egan and Yates types of machines to vary in over-all length.

The construction and operation of the tonguing and grooving saws on the Fay & Egan and Yates machines are just the same as the tonguing and grooving saws are cutters 19 and 20 on Plaintiffs' Exhibit No. 36. There is no opportunity for the cleats manufactured on the Fay & Egan or Yates machines to vary in length from the shoulder at one end of the cleat to the base of the groove at the opposite end of the cleat.

In the stipulated drawings the Plaintiffs' Exhibit No. 29, representing defendant's practice, the cleats are uniformly eight inches in over-all length, the tongues are uniformly $\frac{7}{8}$s of an inch in length and the grooves are uniformly $\frac{7}{8}$ of an inch in depth. These cleats are just the same as the cleats intended to be produced and that would necessarily be produced by the Chase Turbine cleat cutting machine operating as shown in Plaintiffs' Exhibit No. 36.

The adjustment and arrangement of the machine parts of the Chase Turbine machine as shown in Plaintiffs' Exhibit No. 36 are proper for manufacturing cleats in which after the tonguing and grooving operation is finished the [fol. 1052] boards are to be ripped into cleats $\frac{7}{8}$ inches wide.

The measurement from the top of a cleat to the bottom of a cleat as shown in Fig. 2 of Plaintiffs' Exhibit No. 29 is the exact length of the tongue or the exact depth of the groove, which is $\frac{7}{8}$ inches.

R. D. Q. 408. What is the practical possibility of the occurrence of an improper adjustment or "mal adjustment" of the saws and machine parts in any cleat cutting machine that you know of, which would produce cleats having the tongue longer than intended or the depth of the groove greater than intended?

A: In making cleats to be used in wirebound boxes, the man who operates the cleat machine and feeds the cleat material in this cleat machine is held responsible for the manufacturing of these cleats and I know of no instance where the cleat machine would be improperly adjusted as the man who operates this machine well knows that if the machine parts are improperly adjusted that the boxes made from these cleats will be defective.

I have testified that in some instances because of a slightly warped board from which the cleats are cut, the tongue may not be exactly centered or the groove cut at the opposite end may not be in the exact center. The tongues or grooves of the cleats being cut off center would have no effect upon the over all length of the cleat and would not change the length of the tongue or the depth of the groove.

Mr. Janney also appeared as counsel for plaintiffs and continued the redirect examination.

In plaintiffs' machine of the patent in suit, just before and at the time of driving the initial staple in a cleat, the cleat is stationary.

In all three of defendant's machines, just before and at the time of driving the initial staple in a cleat, the cleat is stationary.

In the plaintiffs' machine of the patent in suit, when the cleat is thus stationary as I have said at the time named, the primary positioning element which holds the cleat in proper location to receive the staple when it is driven, is the space block at the rear of the cleat.

In defendant's machine, when the cleat is thus stationary as I have said at the time named, the primary positioning element which holds the cleat in proper location to receive the staple when it is driven, is the space block at the rear of the cleat.

In plaintiffs' workholding mechanism as shown in the [fol. 1053] workholder patent in suit, the spring 15, shown in Figs. 1 and 7 of the workholder patent No. 1,128,144, holds the stationary cleat in its proper relationship to the space block at the rear of the cleat.

In defendant's machine the detent operated by a spring holds the stationary cleat in its proper relationship to the positioning block at the rear of the cleat.

In plaintiffs' workholding mechanism, as shown in the workholder patent in suit, the spring action of the spring 15 is applied, by frictional engagement on the side of the cleat, to the stationary cleat just preparatory to and during the driving of the staple.

In defendant's machine, the spring action of the detent is applied, by frictional engagement on the side of the cleat, to the stationary cleat just preparatory to and during the driving of the staple.

In plaintiffs' machine as shown in the workholder patent in suit, just prior to and at the time of driving a staple into a cleat, the cleat channel and the spring 15 and the positioning block at the rear of the cleat are stationary.

In defendant's machine, just prior to and at the time of driving a staple into a cleat, the cleat channel and the detent and the positioning block at the rear of the cleat, are stationary.

R. D. Q. 420. You have now testified that in both plaintiffs' machine of the patents in suit and in defendant's machines, just prior to and at the time of driving a staple in a cleat, all the following parts are stationary, namely, the cleat itself, the positioning block at the rear of the cleat, the spring pressed device which you say acts by frictional engagement on the side of the cleat and holds the stationary cleat in its proper relationship to the space block at the

rear of the cleat, and the cleat channel which holds the cleat against substantial lateral displacement. Since plaintiffs' and defendant's machine have all this in common at the critical period just before and at the driving of the staple, please explain what difference there is, if any, between the described operation in plaintiffs' machine of the patents in suit and in defendant's machines, just prior to and at the driving of a staple?

By Mr. Cox: Objected to as argumentative and as obviously leading in effect if not in form.

A. There isn't any difference between the plaintiffs' machine of the patent in suit and the defendant's machine relative to the cleat and the positioning block at the rear of the cleat, the frictional engagement that holds the rear end [fol. 1054] of the cleat against the positioning block at the rear end of the cleat and the channel in which the cleats rest just prior to and at the time the staple is driven in the cleat.

Just prior to and at the time of driving a staple into one cleat, it does not make any difference whether following cleats are correctly positioned or not. The only essential time that a cleat must be properly positioned is just prior to and at the time the first staple is driven in the cleat. Just prior to and at the time of driving a staple in one cleat, it does not make a particle of difference whether the following intended cleats have been placed in the machine at all. When one pair of cleats for instance, for the first section of a blank has been correctly positioned to receive its staples, and the stapling of that section has been completed, the critical time thereafter at which the cleats of the second section must be correctly positioned in relation to the cleats of the first section is just prior to and at the time that the first staple is driven in the second section.

R. D. Q. 424. Defendant's expert Mr. McElroy, referring to one of defendant's machines, said (p. 479, X Q. 129 et seq.):

"X Q. 129. What I had in mind in referring only to the first staple driven into the second cleat in the line was this: The wire having been stapled to the first cleat, the foldable relationship of the first cleat to the second cleat is not ren

dered permanent until at least one staple has been driven into the second cleat; and the driving of that one staple renders permanent the distance which is to intervene between the rear end of the first cleat and the advance end of the second cleat. That is correct, is it not?

"A. Yes."

Do you or not agree with Mr. McElroy in this respect?

A. Yes.

R. D. Q. 425. Mr. McElroy's testimony continued thus:

"X Q. 130. And preparatory to the driving of this first staple in the second cleat, the pusher at its rear end and the cleat itself stand at rest in the stationary channel and the stationary clincher bar or detent exerts spring pressure against the side of the cleat to assist in insuring the proper relationship between the rear end of the cleat and the pusher. That is correct, is it not?

"A. Yes."

[fol. 1055] Do you or do you not agree with Mr. McElroy in this answer?

A. I agree with Mr. McElroy.

R. D. Q. 426. Continuing, Mr. McElroy testified:

X Q. 131. And the thing which defines the foldable relationship between the first and the second cleat, before that relationship is rendered permanent by the attachment of the wire to the second cleat, is the distance between the pusher at the rear end of the first cleat and the pusher at the rear end of the second cleat as they have been adjusted on the chain?

"A. Yes."

Do you or do you not agree with Mr. McElroy in this answer?

A. Yes, sir, I agree with Mr. McElroy.

R. D. Q. 427. In these recent questions, quoting Mr. McElroy, we have been referring to defendant's machine. Now referring to plaintiffs' machine of the patents in suit, what then is the thing which defines the foldable relationship between the first and the second cleat, before that relationship is rendered permanent by the attachment of the wire to the second cleat?

A. It is the distance between the positioning face at the rear of the first cleat and the positioning face at the rear end of the second cleat.

In this respect defendant's machine and plaintiffs' machine are just the same.

By Mr. Janney: At the request of defendant's counsel, the witness Steele, caused to be prepared a drawing which was referred to at length, upon the cross-examination, as Defendant's Cross-Exhibit 100. I have asked defendant's counsel whether he now proposes to offer this drawing in evidence, and he has replied that he has not decided; at any rate, it seems evident that he does not propose to offer it in evidence at the present time. Hence, plaintiffs' counsel deems it desirable to offer the drawing in evidence in order that the court may be able to understand clearly what the witness testified about on cross-examination.

I, therefore, offer in evidence the drawing, heretofore marked for identification, "Defendant's Cross-Exhibit 100," that designation to be displayed upon the drawing which is to be marked also "Plaintiffs' Exhibit No. 44," and to bear the title "Diagram of Plaintiffs' Early Machine Employing Positioning Blocks which Engage Cleat Shoulders."

[fol. 1056] By Mr. Cox: I have always felt and now feel, I believe, that plaintiffs' early commercial machine and practices were and are irrelevant, incompetent and immaterial. The issue here is to be determined by a comparison between defendant's machine and the plaintiffs' patents in suit. I objected to plaintiffs' exhibits and testimony relating to the so-called plaintiffs' early machine, but trial courts are usually hesitant in sustaining objections to testimony in patent cases, and my request for additional testimony along the same line was based upon the possibility that the objection would not be sustained and the knowledge that half truths are dangerous and may be easily misinterpreted by counsel, who are naturally partisan, and I felt that if the court decided to consider the testimony at all, it should have all of the facts or alleged facts relating to the subject. It is for that reason that I requested the drawing to be made and asked the witness to describe it, but I still think that the subject is incompetent, irrelevant and immaterial and hence object to the exhibit and the testimony relating to it on that ground.

By Mr. Laughlin: Without waiving the objections made to the admissibility of the Craig patent No. 1,565,909, and since that patent is physically in the record subject to the objections made, we offer in evidence as Plaintiffs' Exhibit No. 45, a certified copy of the file-wrapper and contents of said Craig patent No. 1,565,909 to supplement the showing of the patent itself if it remains in the record.

In connection with the operation of the cleat cutting machines about which I have testified, there is no practical possibility of such an improper adjustment or "maladjustment" which would produce cleats made with shorter tongues or shallower grooves than is intended, because the cleat machine operator who feeds the cleat material in the cleat machine is held responsible for improperly made cleats. Knowing that improperly manufactured cleats would make defective blanks he at all times sees that this cleat machine is properly adjusted.

Redirect examination closed.

Recross examination waived.

Deposition closed. Signature and notarial certificate waived by agreement of counsel.

[fol. 1057] DEPOSITION OF ANTON J. WAWERCYK

A witness on behalf of plaintiffs, taken before Robert H. Kammler, a notary public in and for State of Illinois and County of Cook, acting as Special Examiner by agreement of counsel, beginning September 18, 1926

ANTON J. WAWERCYK, being first duly sworn, testifies as follows:

Direct examination:

By Mr. Laughlin:

My name is Anton J. Wawercyk; age 26; I live at 1037 W. 31st Place, Chicago, Illinois. I operate a wirebound blank machine, at Rathborne, Hair & Ridgeway, on 22nd St. near Laflin St., Chicago, Illinois. I have been work-

ing as a box-blank machine operator at the plant of Rathborne, Hair & Ridgeway, Chicago, about five mont'is.

For three months I worked for Maxwell Brothers, Inc., 2300 South Morgan Street, Chicago, Illinois; that was from November, 1925, to some time in February, 1926, except I was away a short time around Christmas. At the Maxwell Brothers plant I was an operator on a machine making wirebound box blanks.

At the Maxwell Brothers plant, while I worked there, there was one cleat cutting machine and one tongue and groove machine. They cut the cleats at the same time—it was all one machine.

Q. 10. Do you mean that the saws that cut the board for the over-all length of the cleats which I will call the trim saws and the saws that cut the tongues and grooves which have been called tenoning saws were all part of the same machine, or not?

By Mr. Cox: Objected to as grossly leading and as nullifying the probative value of anything this witness may say on the construction of a cleat machine as counsel in his question has described exactly what he evidently wants the witness to say. The witness should have been asked to explain what he meant.

By Mr. Laughlin: In the previous answer the witness stated it was all one machine and I merely asked him, in amplification whether the two sets of saws were part of the same machine or not.

A. It's the same machine.

[fol. 1058] Q. 11. What do you mean by the same machine?

A. Why I believe it's the same machine—it cuts the same as the same machines at Rathborne, Hair & Ridgeway, it cuts groove and tongue at the same time. How I know it cuts the same way because I took away from the machine and I ripped cleats out.

The name of the cleat cutting machine used at the plant of Rathborne, Hair & Ridgeway, where I am now working, is Chase Turbine. I know it is a Chase Turbine machine because on all machines they have a plate on the right-hand side. The name is on it and the patent number is on it too.

Q. 14. Was the cleat cutting machine at the plant of Maxwell Brothers like the cleat cutting machine at the plant of Rathborne, Hair & Ridgeway, where you are now working, or was it not?

By Mr. Cox: Objected to as clearly leading. The witness should have been asked to compare the two machines.

By Mr. Laughlin: The question might or might not call for a comparison. It is entirely proper in form. If the two machines were like each other the witness is requested to say so, and if they were not like each other he is requested to say so.

A. It was the same. They cut them the same way and do everything.

Q. 15. Did the cleats produced on this Maxwell cleat cutting machine vary in over-all length?

A. They did.

Q. 16. How much?

A. What do you mean?

Q. 17. The over-all length of the cleat, from the end of the tongue to the groove end. As the cleats were cut by the machine, did they vary in that length or not?

A. I can't get you. What do you mean?

Q. 18. As these cleats were made on the Maxwell cleat cutting machine, was there, or was there not, any difference in the length of the cleat from one end to the other?

A. There is no difference. They are all cut 7/8 of an inch at tongue and groove.

Q. 19. And how about the entire length of the cleat?

A. Why sometimes they do make a mistake and they throw that out. It is no good at all.

Direct examination closed.

[fol. 1059] Cross-examination.

By Mr. Cox:

Before I worked at Maxwell Brothers I worked at Rathborne, Hair & Ridgeway, a little over 9 years.

X Q. 22. How did you come to leave Rathborne, Hair & Ridgeway and go to Maxwell Brothers?

A. By laying off too often, I stayed home the last time one week straight. Just as I came back the boss told me we are slack now, I can't put you on right now.

X Q. 23. How was it that you came to leave Maxwell Brothers and go back to Rathborne, Hair & Ridgeway?

A. Well it was this way. We worked until 4:30 on a Saturday I wanted to go home at 3:30 which I did and I come back Monday morning and they had my check waiting for me.

X Q. 24. When you went back to Rathborne, Hair & Ridgeway, did they know that you had been at Maxwell Brothers?

A. Why they knew right the second day that I started there.

Cross-examination closed.

Redirect examination.

By Mr. Laughlin:

R. D. Q. 25. When Rathborne, Hair & Ridgeway hired you back the last time, did they know that you had worked at Maxwell Brothers?

A. Yes they knew I worked at Maxwell Brothers.

Redirect examination closed.

Deposition closed and signature and notarial certificate waived by agreement of counsel.

By Mr. Laughlin: Plaintiffs' counsel here notifies defendant's counsel that plaintiff's rebuttal depositions are completed.

[fol. 1060] In United States District Court

STIPULATION RE NARRATIVE STATEMENT OF EVIDENCE.—Filed November 16, 1927

The narrative statement of evidence pursuant to Equity Rule No. 75 (including narrative of proceedings at the First and Second Hearings) in the said cause, having heretofore been lodged in the office of the clerk of the District Court (with due notice thereof given to the defendant), and the same having been revised to meet all objections made and to include all amendments proposed by counsel

for the parties, it is stipulated by and between the parties that the same is true, complete and properly prepared (including such parts as are reproduced in the exact words of the witnesses), and defendant hereby consents to and joins plaintiffs in requesting the approval of the same by the Court and the entry of an order of Court to that effect, and to the effect that the same be filed in the clerk's office and become a part of the record for the purposes of the appeal

Emery, Booth, Janney & Varney, of Counsel for Plaintiffs. Cheever & Cox, of Counsel for Defendant.

Chicago, Illinois, November 15, 1927.

In United States District Court

Order Affirming Narrative Statement of Evidence—November 16, 1927

Now come the plaintiffs and present to the Court their certain narrative Statement of Evidence pursuant to Equity Rule No. 75 (including proceedings at the First and Second Hearings) in this cause, the same having been lodged in the clerk's office, with due notice thereof to defendant, and having been revised to meet all objections made and to include all amendments proposed by counsel for the parties, and it being stipulated that the same is true, complete, and properly prepared (including such parts as are reproduced in the exact words of the witnesses), and counsel for the parties joining in the request for the approval of the same; and said Statement of Evidence, etc., being found by me, before whom said cause was tried and heard, to be true, complete, and properly prepared (including such parts as are reproduced in the exact [fol. 1061] words of the witnesses), the same is hereby approved and ordered to be filed in the clerk's office and become a part of the record for the purposes of the appeal.

Fred M. Raymond, United States District Judge.

Grand Rapids, Michigan, November 16, 1927.

IN UNITED STATES DISTRICT COURT

OPINION—Filed July 9, 1927

The three patents in suit relate to two machines and a method for producing wirebound boxes. These were issued February 9, 1915, to Inwood and Lavenberg and are No. 1,128,144 for "combined carriage and former for wirebound box machines," application filed October 14, 1904, referred to hereinafter as the workholder patent; No. 1,128,145, for "means for making box blanks," application filed October 27, 1904, referred to hereinafter as stapling machine patent, and No. 1,128,252 for "method of making boxes," application filed April 21, 1914, hereinafter referred to as the method patent; this patent being a division of the workholder patent. An expired patent necessarily involved in this controversy resulted from invention substantially contemporaneous with the others and was issued upon a wirebound box which was the product of the above-mentioned patents. This application was filed October 17, 1904, patent issued September 19, 1905, and reissued November 26, 1907, as No. 12,725.

Plaintiffs are the owner and exclusive licensee respectively of the patents in suit. The defendant is the manufacturer and lessor or licensor of machinery for making wirebound boxes.

The history of the prior art briefly stated discloses that for a period of about ten years prior to these inventions a series of inventors (known for convenience as the Rosback inventors) had endeavored to produce a box to replace the nailed box then in general use, the principal object sought being to combine strength, lightness, flexibility, possibility of use of cheap materials, and economical production. These efforts resulted in failure although it is evident that the conception was present that thin veneer and cleats might be co-ordinated with wire in some manner to produce the desired result. The nearest approach to success was the use of a single sheet of selected veneer [fol. 1062] long enough to supply the four sides of the box assembled with cleat material of substantially the same length. Wire was stapled to this single veneer sheet thereby producing a rigid blank which was pushed through

a stepmitering machine which cut the cleat strips into four lengths, trimmed the two ends of the blanks and simultaneously step-mitered the respective cleat ends and lightly scored the long veneer sheet along the folding lines to facilitate bending. This method produced a box which was light and strong but which lacked flexibility and elasticity. The substantial obstacles encountered however were the impossibility of automatic or partly automatic production and the checking and occasional breaking of the veneer sheets at or near the corners of the boxes. The comparison of the method and results produced by the Rosback inventors and that of Inwood and Lavenberg is concisely stated in the specifications of the box patent as follows:

"The present method of manufacturing wirebound boxes is to form the blank of a single sheet stitched or stapled to single piece cleats for each end of the box, the cleats being stepmitered and the sheets scored or grooved on the under side, so as to form four sections, after the cleats, sheets and reinforcing wires have been stapled together. This box blank when folded forms a rounding edge, the veneer sheets if not thoroughly seasoned so as to have pliability, begin to check as the lumber seasons. As the grain of the wood may be diagonal to the edge of the box, the check will follow the grain, thus rendering the box unsightly, besides a possible opening of a size so as to preclude its use for goods requiring a tight jointed box." * * *

"Our invention relates to certain improvements in wirebound boxes, especially of that class in which the blanks constituting the four sides of the box are assembled and secured in relative position to each other prior to folding by reinforcing wires, and has for its object the assembling and fastening together such parts constituting the completed blank so that the same when folded will produce overlapping edges of the side sheets or boards, the advantages of which will be hereafter pointed out."

The underlying concept of the patents in suit is stated by plaintiffs to be the mechanical positioning of cleats and sheets in co-ordinated foldable relationships so that the immediate product of the machine shall be the foldable blank [fol. 1063] having relationships and co-ordination of its parts in the finished box definitely predetermined. This

is accomplished by the assembly of cleats and sheets upon a workholder in relationship to each other determined by mechanical positioning devices, these relationships being perpetuated by binding wires and staples. Rosback and his associates propelled raw material strips through a blank machine to produce a rigid blank which had to be made foldable at a subsequent step by means of a step-mitering machine. Plaintiffs' expert states the comparison concisely as follows:

"The Rosback practices had taught the idea of producing foldable relationships by the operation of cutting the preliminary rigid blank. Inwood and Lavenberg rejected that teaching and solved their problem by relatively positioning and wiring together entirely separate parts in such manner that their intended co-operation in the finished box should be ensured. In brief, Rosback taught the production of foldable relationships by cutting. Inwood and Lavenberg produced a flexible box blank by an assembling and wiring together of separate elements."

The validity of the wirebound box patent No. 12,725 was sustained in the case of Wirebounds Patent Co. v. Chicago Mill and Lumber Co., 238 Fed. Rep. 929. This patent expired September 19, 1922, and the public has thereby acquired certain rights, the precise nature of which is an important element of this controversy. As a result of litigation and interference proceedings the two machine patents applied for in October, 1904, were not issued until February 9, 1915.

By original and two supplemental bills of complaint three species of infringement by defendant are alleged. The first species involves a blank machine and method in which the blank produced on the machine was made up of four side sheets and two pairs of cleats, the third and fourth pairs of cleats being added with the blank at a later stage in the method, this being denominated the alternate cleat method. The second species of alleged infringement involves a machine and method whereby the blank machine receives four side sheets and four pairs of cleats, two pairs of cleats having been pre-tacked to their respective side sheets, this being called the precleated method. The third species of infringement which is set forth in the sec-

ond supplemental bill relates to a blank machine and method characterized by the use of four side sheets and [fol. 1064] four pairs of cleats, all of which are detached from each other when they are put on the blank machine. This method is referred to as the full cleated method. It is asserted that by this third species of alleged infringement defendant has adopted precisely the practice disclosed by the patents in suit, namely, the assembly of eight loose cleats and four loose side sheets upon a blank machine or workholder which is a mechanical device for positioning pre-formed and pre-dimensioned box parts for co-operative foldable relationships so that binding wires may be stapled to the box parts to the end that all of the box parts are connected with wires which perpetuate the relationships in which the box parts are assembled.

The parties agree that there is no material difference between these three machines and methods excepting that by the practice of the third method defendant has drawn nearer to the patents in suit, machinery for practicing the third method being fundamentally and in principle the same as the machines previously complained of. It follows therefore that if the use of defendant's third machine and method does not constitute infringement neither do the first and second machines and methods.

It seems to the court that plaintiffs' expert has correctly expressed the improvement of the Inwood and Lavenberg patents over the preceding Rosback inventions in the comparison hereinbefore quoted, namely, that Rosback taught the production of foldable relationships by cutting while Inwood and Lavenberf taught the production of foldable relationships by assembling and wiring together separate box elements. The Inwood and Lavenberg method produced a box having the merits sought. An important question here presented is whether the essential elements of that method of production are now open to public use by reason of the expiration of the box patent or whether by reason of the grant of the method patent nearly ten years later plaintiff still has the right to enjoy for a considerable period the exclusive use of the method disclosed in the method patent. Careful consideration of the evidence results in the conclusion that neither the so-called modified Rosback method nor any other method sug-

gested for producing the box are commercially practical though they may be theoretically possible.

The method patent in suit presents an anomalous history. Notwithstanding the fact that the specifications of the box patent fully disclosed the essential difference between the prior methods and the method by which the [fol. 1065] box could be produced, no claims were at any time made in connection therewith which would indicate to the public that applicants believed the method to be patentable. It is true that on November 2, 1904, Inwood and Lavenberg filed method claims in the stapling machine application. On December 31, 1904, however, the patent office objected to the amendment and in so doing used the following language:

"The proposed amendment filed Nov. 2, 1904, has not been entered. There is no foundation for method claims in this case. Moreover this amendment cannot be entered unless accompanied by a supplemental oath, and the amendment is refused admission for that reason. It is to be noted however that the alleged method claims are not believed to cover proper methods but merely the operation of the machine covered by the other claims in the case, so that even if this amendment were supported by a supplemental oath and entered the method claims contained therein would be subject to rejection."

On January 16, 1905, the Commissioner of Patents was instructed by the attorneys for applicants to cancel the proposed amendment. This was clearly an abandonment of the method claims. No method claim was again filed until March 30, 1912. This claim was required by the Examiner to be erased because directed to divisional subject matter. Method claims were again filed April 8, 1913, and again required to be erased for the same reason. The claims for method patent were not again filed until March 14, 1914, at which time they were filed as an amendment to the workholder application whereupon it was directed by the Examiner that the claim must be presented in a separate application because directed to divisional subject matter. This resulted in the application for method patent filed April 21st, 1914, upon which the method patent in suit was issued. At the time this application was filed the method disclosed by

the box patent had been in use for considerably over nine years. Careful consideration of the testimony in this case discloses no sufficient reason why Inwood and Lavenberg should not have filed their divisional application long before the date upon which it was actually filed. It appears from the evidence that the interference in which the two machine patents were involved had nothing whatever to do with the method or process. There being no evidence of inadvertence, accident or mistake, it seems to the court that the long delay of Inwood and Lavenberg in filing the divisional [fol. 1066] application constitutes laches invalidating the patent issued thereon. No special circumstances sufficient to explain the delay have been established. See Webster Electric Co. v. Splitdorf Electric Co., 264 U. S. 463; Victor Talking Machine Co. v. Brunswick-Balke-Collender Co., et al., 290 Fed. Rep. 565, 8 Fed. (2) 41.

In this case therefore the product patent having expired the public has become entitled to produce the box by the method disclosed by the patent. As previously stated the reissue box patent expired September 19, 1922, and on that date the defendant and the public had the right to begin making and using the box blank and the method of manufacture thereof disclosed by this patent. It appears to the court that as soon as the method disclosed in the box patent was divulged it became obvious to those familiar with the prior Rosback inventions that in order to produce the Inwood and Lavenberg box blank it would be necessary only to add the extra pushers called for by the extra pieces of a different form of blank, and that so to do was a matter merely of the exercise of ordinary mechanical skill. The machine used by defendant is nothing more than the Rosback machine with additional pushers placed on the feed chains. Consequently there is no infringement of the method patent nor of the machine or workholder patents. A decree will thereforee be entered dismissing the bill of complaint.

Fred M. Raymond, District Judge.

Dated, July 9, 1927.

IN UNITED STATES DISTRICT COURT

FINAL DECREE—Aug. 5, 1927

This cause having come on to be heard on the pleadings, proofs and proceedings herein, and having been argued orally and in written briefs submitted by counsel for the respective parties, Laurence A. Janney and Emery, Booth, Janney & Varney appearing for plaintiffs, Messrs. Howard M. Cox and Dwight B. Cheever appearing for defendant, and the Court being fully advised in the premises, now upon consideration thereof, it is hereby:

Ordered, adjudged and decreed as follows:

(1) That as to U. S. letters patent to Inwood & Lavenberg, No. 1,128,144, dated February 9, 1915, for improvements in Combined Carriage and Former for Wire Bound [fol. 1067] Box Machines, the claims involved in suit, viz.: Nos. 6, 11, 13, 14, 26, 34, 37, 38, 39 and 40, are invalid if infringed by the defendant, Saranac Automatic Machine Corporation.

(2) That as to U. S. letters patent to Inwood & Lavenberg, No. 1,128,145, dated February 9, 1915, for improvements in Means for Making Box Blanks, the claims involved in suit, viz.: Nos. 23, 25, 36, 38, 46, 56, 57, 58, 61, 62, 63, 64, 65 and 66 are invalid if infringed by the defendant, Saranac Automatic Machine Corporation.

(3) That United States letters patent to Inwood & Lavenberg No. 1,128,252, dated February 9, 1915, for improvements in Method of Making Boxes, is invalid.

(4) That plaintiffs' bills of complaint be, and the same hereby are, dismissed.

(5) That the defendant recover its full costs against plaintiffs when taxed by the clerk of this Court and have execution therefor.

Fred M. Raymond, United States District Judge.

Approved as to form.

Emery, Booth, Janney & Varney, of Counsel for Plaintiffs. Cheever & Cox, of Counsel for Defendant.

Grand Rapids, Michigan, August 5, 1927.

In United States District Court

Petition for Appeal and Order Allowing Same—Filed

The above named plaintiffs, conceiving themselves aggrieved by the decree made and entered on the 5th day of August, 1927, in the above entitled cause, do hereby appeal from said decree to the United States Circuit Court of Appeals for the Sixth Circuit, for the reasons specified in the assignment of errors which is filed herewith, and they pray that this appeal may be allowed, and that a transcript of the record, proceedings and papers upon which said decree was based, duly authenticated, may be sent to the said Circuit Court of Appeals for the Sixth Circuit.

Emery, Booth, Janney & Varney, of Counsel for Plaintiffs.

[fol. 1068] The foregoing petition for appeal is allowed upon the plaintiffs giving a bond, conditioned as required by law in sum of Three Hundred Dollars ($300.00).

Fred M. Raymond, United States District Judge.

Grand Rapids, Michigan, August 10, 1927.

In United States District Court

Assignment of Errors—Filed August 10, 1927

Now come the plaintiffs in the above-entitled cause, by their counsel, and respectfully represent that in the decree entered on the 5th day of August, 1927, the Court erred in the following particulars:

First. The Court erred in holding that as to U. S. letters patent to Inwood & Lavenberg, No. 1,128,144, dated February 9, 1915, for improvements in Combined Carriage and Former for Wire Bound Box Machines, the claims involved in suit, viz.: Nos. 6, 11, 13, 14, 26, 34, 37, 38, 39 and 40, are invalid if infringed by the defendant Saranac Automatic Machine Corporation.

Second. The Court erred in not finding that U. S. letters patent No. 1,128,144 are good and valid in law, and infringed

by the defendant as to claims 6, 11, 13, 14, 26, 34, 37, 38, 39 and 40 thereof.

Third. The Court erred in holding that as to U. S. letters patent to Inwood & Lavenberg, No. 1,128,145, dated February 9, 1915, for improvements in Means for Making Box Blanks, the claims involved in suit, viz.: Nos. 23, 25, 36, 38, 46, 56, 57, 58, 61, 62, 63, 64, 65 and 66, are invalid if infringed by the defendant, Saranac Automatic Machine Corporation.

Fourth. The Court erred in not finding that U. S. letters patent No. 1,128,145 are good and valid in law, and infringed by the defendant as to claims 23, 25, 36, 38, 46, 56, 57, 58, 61, 62, 63, 64, 65 and 66 thereof.

Fifth. The Court erred in holding that U. S. letters patent to Inwood & Lavenberg, No. 1,128,252, dated February 9, 1915, for improvements in Method of Making Boxes, is invalid.

Sixth. The Court erred in not finding that U. S. letters patent No. 1,128,252 are good and valid in law, and infringed by the defendant as to claims, 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15 and 17 thereof.

Seventh. The Court erred in holding that the cancellation of the amendment containing method claims, filed November [fol. 1069] 2, 1904, in the application Serial No. 230,249, which eventuated in letters patent No. 1,128,145 in suit, constituted an abandonment of claims 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15 and 17 of U. S. letters patent No. 1,128,252 in suit.

Eighth. The Court erred in holding that claims 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15 and 17 of U. S. Letters patent No. 1,128,252 in suit, are invalid because of laches in filing the divisional application which eventuated in said letters patent No. 1,128,252.

Ninth. The Court erred in finding the fact to be that the specifications of U. S. letters patent to Inwood & Lavenberg, reissue No. 12,725, dated November 26, 1907, for Improvements in Boxes, fully disclosed the essential difference between the prior methods and the method by which the box could be produced.

Tenth. The Court erred in holding that letters patent reissue No. 12,725, having expired, the public has become entitled to produce the box by the method disclosed by the patent, and in holding that on the expiration of said letters patent reissue No. 12,725, the defendant and the public had the right to begin making and using the box blank and the method of manufacture thereof disclosed by this patent.

Eleventh. The Court erred in holding that as soon as the method disclosed in said U. S. letters patent reissue No. 12,725 was divulged, it became obvious to those familiar with the prior Rosback inventions that in order to produce the Inwood & Lavenberg box blank it would be necessary only to add the extra pushers called for by the extra pieces of a different form of blank, and that so to do was a matter merely of the exercise of ordinary mechanical skill.

Twelfth. The Court erred in holding that the machine used by defendant was nothing more than the Rosback machine with additional pushers placed on the feed chains.

Thirteenth. The Court erred in not requiring the defendant to account to plaintiffs for the profits realized by it and the damages to plaintiffs in the premises, and in not referring this cause to a Master to take an accounting of said profits and damages.

Fourteenth. The Court erred in not granting an injunction perpetually restraining the defendant, its agents, servants, workmen, and all persons in privity with them, and each of them, from directly or indirectly infringing said letters patent Nos. 1,128,144, 1,128,145 and 1,128,252, or any of them.

[fol. 1070] Fifteenth. The Court erred in not requiring the defendant to pay to plaintiffs the costs and disbursements of this suit.

Sixteenth. The Court erred in dismissing plaintiffs' bills of complaint and in not entering a decree for plaintiffs pursuant to the prayers of the bills of complaint herein.

Wherefore, the plaintiffs pray that the said decree be reversed and that the said Court may be directed to enter

a decree in accordance with the prayers of the bills of complaint.

Emery, Booth, Janney & Varney, Plaintiffs' Counsel.
Edward S. White, Howard S. Laughlin, Emery, Booth, Janney & Varney, of Counsel. Knappen, Uhl & Bryant, Plaintiffs' Solicitors.

Bond on Appeal for $300000 approved and filed August 18, 1927, omitted in printing.

[fol. 1071] Citation, in usual form, showing service on Howard M. Cox, filed August 15, 1927, omitted in printing.

[fol. 1072] In United States District Court

Praecipe—Filed November 22, 1927

The clerk of the United States District Court for the Western District of Michigan, Southern Division, is hereby instructed by the plaintiffs to make up and certify a transcript of the record of the above entitled cause for transmission upon plaintiffs' appeal, allowed August 10, 1927, to the United States Circuit Court of Appeals for the Sixth Circuit, from the final decree entered August 5, 1927, dismissing plaintiffs' bill of complaint.

The items to be included, being all of record in the District Court, are as follows:

1. Bill of Complaint, filed March 16, 1925.
2. Motion to Amend Bill of Complaint, filed April 4, 1925.
3. Answer, filed April 24, 1925.
4. Defendant's Interrogatory, filed April 24, 1925.
5. Plaintiffs' Reply to Defendant's Interrogatory, filed May 14, 1925.
6. Supplemental Bill of Complaint, filed September 24, 1925.
7. Order Granting Leave to File Supplemental Bill, etc., entered September 25, 1925.

8. Answer to Supplemental Bill, filed September 29, 1925. [fol. 1073] 9. Order Granting Plaintiffs Leave to File Plaintiffs' Exhibit No. 27, filed October 26, 1925.

10. Supplement to Answer to First Supplemental Bill of Complaint, filed April 9, 1926.

11. Order Granting Leave to File Second Supplemental Bill of Complaint, filed April 9, 1926.

12. Second Supplemental Bill of Complaint, filed April 9, 1926.

13. Answer to Second Supplemental Bill of Complaint, filed April 24, 1926.

14. Narrative Statement of Evidence Pursuant to Equity Rule No. 75 (Including Stipulations, Depositions, etc., and Narratives of Proceedings at the First and Second Hearings, filed November 16, 1927.

15. Order Approving Narrative Statement of Evidence, entered November 16, 1927.

16. Plaintiffs' Exhibit No. 1, Printed Copy, Inwood & Lavenberg Patent in Suit No. 1,128,144.

17. Plaintiffs' Exhibit No. 2, Printed Copy, Inwood & Lavenberg Patent in Suit, No. 1,128,145.

18. Plaintiffs' Exhibit No. 3, Printed Copy, Inwood & Lavenberg Patent in Suit No. 1,128,252.

19. Plaintiffs' Exhibit No. 4, Printed Copy, Inwood & Lavenberg Reissued Patent No. 12,725.

20. Plaintiffs' Exhibit No. 5, Photograph of Traveling Head Machine.

21. Plaintiffs' Exhibit No. 6, Drawing of Tongue and Groove, Shiplap and Straight Mitered Cleat Ends.

22. Plaintiffs' Exhibit No. 7, Sample of Defendant's Spacer Block with Rear of Cleat-Positioning Finger Milled Away (Physical Exhibit).

23. Plaintiffs' Exhibit No. 8, Drawing of Defendant's Machine at Conneaut Can Company.

24. Plaintiffs' Exhibit No. 9, Drawing of Clincher Block on Defendant's Machine.

25. Plaintiffs' Exhibit No. 10, Drawing of Defendant's Machine, Sheet 1 (Reproduction of Plaintiffs' Exhibit No. 9 in the Gibbons Suit).

26. Plaintiffs' Exhibit No. 10-A, Drawings of Defendant's Machine, Sheet II (Reproduction of Plaintiffs' Exhibit No. 9 in the Gibbons Suit).

27. Plaintiffs' Exhibit No. 11, Drawing of Pre-Cleating Machine and Product at Gondert & Lienesch Plant.

28. Plaintiffs' Exhibit No. 12, Drawing of Defendant's Machine at Gondert & Lienesch Plant, Showing Assembled Blank and Two Pre-Cleated Sections.

2-. Plaintiffs' Exhibit No. 13, Drawing of Completed [fol. 1074] Box Made at Gondert & Lienesch Plant from Alternate Cleated Blank.

30. Plaintiffs' Exhibit No. 14, Sample of Defendant's Spacer Block with Cleat-Positioning Finger Used in Making Alternate Cleated Blank (Physical Exhibit).

31. Plaintiffs' Exhibit No. 15, Sample of Defendant's Spacer Block Without Cleat-Positioning Finger (Physical Exhibit).

32. Plaintiffs' Exhibit No. 16, Drawing of Detent on "First White Machine."

33. Plaintiffs' Exhibit No. 17, Drawing of Defendant's "First White Machine" Showing Assembly of Eight-Cleated Blank.

34. Plaintiffs' Exhibit No. 18, Drawing of Right and Left Spacer Spacer Blocks, Milled for Eight-Cleated Blank.

35. Plaintiffs' Exhibit No. 19, Drawing of Set-Up of Milled Spacer Blocks and Box Parts for Producing Eight-Cleated Blank.

36. Plaintiffs' Exhibit No. 20, Advertising Circular of Defendant's Licensee, Maxwell Bros., Inc., Obverse and Reverse Sides.

37. Plaintiffs' Exhibit No. 21, Defendant's Advertisement in May, 1925, Issue of "Barrel and Box."

38. Plaintiffs' Exhibit No. 22, General Advertising of Defendant Appearing in "Barrel and Box" and "Packages" pages as follows:

22-A, p. 22, April 1923, Issue "Packages."

22-B, p. 4, June, 1923, Issue "Packages."

22-C, p. 7, August, 1923, Issue "Packages."

22-D, p. 26, April, 1924, Issue "Packages."

22-E, Front Cover, April, 1925, Issue "Packages."

22-F, p. 17, May 1925, Issue "Packages."

22-G, p. 55, April, 1923, Issue "Barrel and Box."

22-H, p. 52, July, 1923, Issue "Barrel and Box."
22-I, p. 31, April, 1924, Issue "Barrel and Box."
22-J, p. 35, April, 1925, Issue "Barrel and Box."
22-K, p. 33, May, 1925, Issue "Barrel and Box."

39. Plaintiffs' Exhibit No. 23, Sheet 2, Drawings of N. E. Brown Patent No. 1,276,484.

40. Plaintiffs' Exhibit No. 25, Browne Sketch of Modified Rosback Method.

41. Plaintiffs' Exhibit No. 26, Record on Motion for Preliminary Injunction in Suit of Wirebounds Patents Co. et al. v. H. R. Gibbons Box Co. (Physical Exhibit).

42. Plaintiffs' Exhibit No. 27, Plaintiffs' Record in Suit of Wirebounds Patents Co. et al. v. H. R. Gibbons Box Co., in the United States District Court for the Northern Dis- [fol. 1075] trict of Illinois, Eastern Division, in Equity No. 2689 (Physical Exhibit).

43. (From Plaintiffs' Exhibit No. 27), Printed Copy of Wetmore Patent No. 1,394,593.

44. Plaintiffs' Cross-Exhibit X-1, McElroy Drawing of Hypothetical Blank Assembly Showing Two Pre-Cleated Sections and Step-Mitered Cleats.

45. Plaintiffs' Cross-Exhibit X-2, McElroy Drawing of Hypothetical Blank Assembly Showing Two Pre-Cleated Sections and Plain Mitered Cleats.

46. Plaintiffs' Cross-Exhibit X-3, McElroy Drawing of Hypothetical Blank Assembly Showing Single Step-Miter at One End of Each Cleat.

47. Plaintiffs' Cross-Exhibits X-4 and X-5, Drawing of Hypothetical Blank Assembly Using Loose Metal Spacer Bars and Drawing of Hypothetical Blank Assembly With Spacer Bars Attached to Chains.

48. Plaintiffs' Cross-Exhibits X-6 and X-7, Drawings of Hypothetical Blank Assembly With Metal Blocks Secured to Chains.

49. Plaintiffs' Diagrams Sheets 1 to 6 Inclusive, and Cross-Exhibit Y, Used in Cross-Examination of McElroy in Gibbons Suit.

50. Plaintiffs' Cross-Exhibit X, Box Blank Split by McElroy (Physical Exhibit).

51. Plaintiffs' Exhibit No. 10 in Gibbons Suit (Babcock's Sketch).

52. Photographic Reproduction of Defendants' Exhibit No. 8 from Healy Record.

53. Enlarged Photographic Reproduction of Written Descriptive Matter Appearing at Lower Left-Hand Corner of Defendant's Exhibit No. 8 from Healy Record.

54. Photographic Reproduction of Defendants' Exhibit No. 9 from Healy Record.

55. Enlarged Photographic Reproduction of Written Descriptive Matter Appearing at Lower Right-Hand Corner of Defendants' Exhibit No. 9 from Healy Record.

56. Complainant's Exhibit 118 from Healy Record.

57. Plaintiffs' Exhibit No. 28, Stipulated Drawing of Defendant's Machine, Sheet I.

58. Plaintiffs' Exhibit No. 29, Stipulated Drawing of Defendant's Machine, Sheet II.

59. Plaintiffs' Exhibit No. 30, Defendant's Block for Positioning Cleat End Flush with Edge; Stipulated (Physical Exhibit).

60. Plaintiffs' Exhibit No. 31, Defendant's Block for Positioning Cleat End Spaced Back from Sheet Edge to Produce Over-lap; Stipulated (Physical Exhibit).

[fol. 1076] 61. Plaintiffs' Exhibit No. 32, Photograph of Exhibit No. 30, per Stipulation.

62. Plaintiffs' Exihbit No. 33, Photograph of Exhibit No. 31, per Stipulation.

63. Plaintiffs' Exhibit No. 34, Plaintiffs' Drawing of Defendant's Machine at Maxwell Bros.' Plant, Macon, Ga., Sheet I.

64. Plaintiffs' Exhibit No. 35, Plaintiffs' Drawing of Defendant's Machine at Maxwell Bros.' Plant, Macon, Ga., Sheet II.

65. Plaintiffs' Exhibit No. 36, Plaintiffs' Drawing of Chase Turbine Mfg. Co. Cleat Cutting Machine.

66. Plaintiffs' Exhibit No. 37, Printed Reproduction of Catalogue of Chase Turbine Mfg. Co.—Double-End Cleat Tenoner—Gang Rip-Saw Machine: Pages (Cover), (1), (2), (3) and (4).

67. Plaintiffs' Exhibit No. 38, Plaintiffs' Drawing Illustrating Alternative Use of Positioning Blocks to Engage Cleat Shoulders or Cleat Ends.

68. Plaintiffs' Exhibit No. 39, Sample of Plaintiffs' Shoulder Engaging Block (Physical Exhibit).

69. Plaintiffs' Exhibit No. 40, Plaintiffs' Cleat-Positioning Block for Engaging Extreme End of Cleat (Physical Exhibit).

70. Plaintiffs' Exhibit No. 41, Plaintiffs' Drawing Illustrating Use in Defendant's Third Machine of Cleats Having Tongues 1/4 Inch Longer Than Intended.

71. Plaintiffs' Exhibit No. 42, Plaintiffs' Drawing Illustrating Use in Defendant's Third Machine of Cleats Having Tongues 1/4 Inch Longer Than Intended.

72. Plaintiffs' Exhibit No. 43, Plaintiffs' Drawing Illustrating Impracticability of Spacing Cleats Closer Together or Farther Apart on Defendant's Machine.

73. Plaintiffs' Exhibit No. 44, Diagram of Plaintiffs' Early Machine Employing Positioning Blocks Which Engage Cleat Shoulders.

74. Plaintiffs' Exhibit No. 45, Certified Copy File-Wrapper and Contents Craig Patent No. 1,565,909 (Physical Exhibit).

75. Defendant's Exhibits Nos. 1 and 1*a*, Photo-Prints of "South Bend" or "St. Joe" Machine.

76. Defendant's Exhibit No. 2, Drawing of Hexagonal Box Blank.

77. Defendant's Exhibit No. 3, Drawing of Octagonal Box Blank.

78. Defendant's Exhibit No. 4, Photograph of Defendant's Machine.

[fol. 1077] 79. Defendant's Exhibit No. 5, Photograph of Defendant's Machine.

80. Defendant's Exhibit No. 6, Photograph Showing Rosback Machine.

81. Defendant's Exhibit No. 7, Photograph of Defendant's Machine.

82. Defendant's Exhibit No. 8, Printed Copy of Healy Patent No. 1,248,414.

83. Defendant's Exhibit No. 9, Transcript of Record, Healy v. Inwood and Lavenberg, in Court of Appeals, District of Columbia (Physical Exhibit).

84. Defendant's Exhibit No. 10, Drawing Opposite Page 23, Gibbons Record.

85. Defendant's Exhibit No. 11, File-Wrapper and Contents of Inwood & Lavenberg Patent No. 799,854 (Physical Exhibit).

86. Defendant's Exhibit No. 12, File-Wrapper and Contents of Inwood & Lavenberg Reissue Patent No. 12,725 (Physical Exhibit).

87. Defendant's Exhibit No. 13, File-Wrapper and Contents of Inwood & Lavenberg Patent No. 1,128,252 (Physical Exhibit).

88. Defendant's Exhibit No. 14, File-Wrapper and Contents of Inwood & Lavenberg Patent No. 1,128,145 (Physical Exhibit).

89. Defendant's Exhibit No. 15, File-Wrapper and Contents of Inwood & Lavenberg Patent No. 1,128,144 (Physical Exhibit).

90. From Defendant's Exhibit No. 16, Volume of Prior Art Patents; Printed Copies of Certain Patents Therein, As Selected by Defendant's Counsel, Same Being Cited in Answer, as follows:

Hamilton, 373,828.
Shunk, 410,034.
Patterson, 441,326.
Howenstine, 453,479.
Ramsey, 486,297.
Knudtson & Uhri, 518,038.
Jonas, 538,021.
Greenstreet, 547,486.
Greenstreet, 579,574.
Rosback, 608,796.
Uhri, 608,809.
Rosback, 608,917.
Rosback, 609,630.
Rosback, 614,348.
Rosback, 623,258.
Rosback, 625,958.
[fol. 1078] Rosback, 630,303.
Rosback, 636,068.
Greenstreet, 652,357.
Stuckenberg, 659,772.
Averill, 661,481.
Pollock, 686,329.
Fuller, 690,416.
Fuller, 694,467.
Greenstreet, 722,423.
Walker, 763,579.
Walker, 767,613.

Healy, 768,123.
Inwood & Lavenberg, 799,854.
Lipps & Springer, 801,998.
Inwood & Lavenberg, 806,411.
Miller, 815,197.
Healy, 827,097.
Wilder, 832,564.
Craig, 864,955.
Brown, 1,276,484.

91. Defendant's Exhibit No. 17, Defendant's Record, Wirebounds Patents Co. *et al v.* H. R. Gibbons Box Co. (Including Exhibits, among which is included the record in National Wire Bound Box Co. *et al. v.* William P. Healy, United States Circuit Court of Appeals for the Seventh Circuit, October Term, A. D. 1909, No. 1717) (Physical Exhibit).

92. Defendant's Exhibit No. 18, Volume of Patents Owned by Defendant; Printed Copies as follows:
Craig, 1,132,515.
Craig, 1,208,297.
Craig & Ray, 1,254,779.
Craig, 1,258,989.
Craig, 1,384,239.

93. Defendant's Exhibit No. 19, Printed Copy of Craig Patent No. 1,565,909.

94. Defendant's Exhibit No. 20, Printed Copy of Craig Patent No. 1,555,189.

95. Defendant's Exhibit No. 21, Printed Copy of Craig Patent No. 1,562,413.

96. Opinion of District Court (Judge Raymond), filed July 9, 1927.

97. Final Decree, Entered August 5, 1927.

98. Petition for Appeal, and Allowance Thereof, Entered August 10, 1927.

[fol. 1079] 99. Assignment of Errors, Filed August 10, 1927.

100. Appeal Bond, Approved and Filed August 18, 1927.

101. Citation and Proof of Service Thereof—Returned August 15, 1927.

102. Stipulation *re* Narrative Statement of Evidence, Filed November 16, 1927.

103. This Præcipe and Stipulation Attached.

104. Orders Extending Time to File Transcript.

105. Clerk's Certificate.

STIPULATION

Subject to the approval and direction of the Court, it is stipulated and agreed by and between counsel for the respective parties, as follows:

1. That the above and foregoing Præcipe is correct and that the papers, pleadings, orders, stipulations, narratives of testimony and proceedings, documents, and exhibits therein set forth are sufficient for a complete transcript of record in this cause on appeal. Counsel hereby adopt the foregoing Præcipe as a list designated by each of the parties to this cause to complete said transcript, and agree that said Præcipe shall be obeyed by and acted upon by the clerk as fully and to all intents and purposes in the same manner as if a Præcipe had been regularly filed by each party to this cause, and a true copy thereof served upon the other party hereto.

2. That all exhibits listed in the above and foregoing Præcipe as "Physical Exhibits" may be certified as physical or original exhibits, not to be incorporated in the transcript, and may be retained in the possession of respective counsel. Said physical exhibits, as original papers and exhibits, shall be produced at the hearing of the appeal in accordance with the rules, and may be used by and for each party in the argument and other proceedings on appeal.

3. That the transcript of record as presented to the clerk by the printer, is a true, full and complete copy of the original pleadings papers, and orders as set forth in the Præcipe for transcript and the narrative statement of evidence as approved by the Court, and that the clerk may certify the [fol. 1080] printed transcript of record as required by law and the rules of the Appellate Court without further comparison by the clerk.

Laurence A. Janney, Emery, Booth, Janney & Varney, Counsel for Plaintiffs. Howard M. Cox, Cheever & Cox, Counsel for Defendant.

Approved and so directed.

Grand Rapids, Michigan, November 22, 1927.

Fred M. Raymond, District Judge.

In United States District Court

Order Extending Time for Filing Transcript of Record

September 7, 1927

On application of plaintiffs-appellants, and for good cause shown, it is ordered that the time for filing transcript of record in the United States Circuit Court of Appeals for the Sixth Circuit be extended to October 9, 1927.

Fred M. Raymond, United States District Judge.

Grand Rapids, Michigan, September 7, 1927.

In United States District Court

Order Extending Time for Filing Transcript of Record and for Settling Statement of Evidence—October 3, 1927

On application of plaintiffs-appellants, it is hereby ordered, as follows:

1. That the time for filing transcript of record in the United States Circuit Court of Appeals for the Sixth Circuit be extended to November 9, 1927.

2. That the time for approval and filing of the statement of evidence (pursuant to Equity Rule No. 75) to be included in the said transcript of record, be continued beyond the term of court within which the decree was entered.

Fred M. Raymond, United States District Judge.

Grand Rapids, Michigan, October 3, 1927.

[fols. 1081 & 1082] Counsel for defendant appellee hereby consents to the entry of the foregoing order.

Cheever & Cox, Howard M. Cox, Counsel for Defendant-Appellee.

Chicago, Ill., October 1, 1927.

In United States District Court

Order Extending Time for Filing Transcript of Record—November 2, 1927

On application of plaintiffs-appellants, and for good cause shown, it is ordered that the time for filing transcript of record in the United States Circuit Court of Appeals for the Sixth Circuit be extended to December 9, 1927.

Fred M. Raymond, United States District Judge.

Grand Rapids, Mich., November 2, 1927.

Counsel for defendant hereby consents to the entry of the foregoing order.

Howard M. Cox, Counsel for Defendant.

Chicago, Illinois, November 1, 1927.

In United States District Court

Order Extending Time for Filing Transcript of Record—November 22, 1927

For good cause shown, the time for filing transcript of record in the above-entitled cause, on appeal to the Circuit Court of Appeals for the Sixth Circuit, is hereby extended to and including January 9, 1928.

Dated November 22, 1927.

Fred M. Raymond, United States District Judge.

(Here follow Plaintiffs' Exhibits Nos. 22-A, B, C, D, E, F, G, H, I, J, K, 37, and 1 side folios 1083 to 1114 inc.)

The Saranac Wire-Bound Box

and

Machinery *for Its Manufacture*

R. D.—Inside View

This box, the process of manufacture, and the machines for making it are patented.

Packed, Closed and Ready to Ship

Saranac wire-bound boxes and the machinery for producing them have been in use during the past five years.

Saranac wire-bound box equipment is not only mechanically the best on the market today, but also has the greatest capacity for low-cost production.

Boxes and crates for every purpose in which wire-bound construction may be desired can be made on Saranac machines under full patent protection.

Saranac wire-bound box-blank stitchers will operate perfectly at speeds even greater than the operators or stock feeders can lay stock in the carriers.

The Saranac End Stapler for setting up Saranac wire-bound boxes can be installed at a very low cost, and easily operated. It drives staples from the **outside** of the box.

Important Announcement

We are pleased to report that we are now prepared to furnish machinery for making any desired or known form of wirebound box blank. In other words, we are prepared to furnish machinery for either the Saranac alternate cleat blank which is giving such universal satisfaction everywhere, or the full cleated blank having eight cleats thereon, for those who desire this particular form of blank, or even the cleatless blank which is often preferred for certain kinds of merchandise. The eight-cleated blank, having two cleats on each end every section thereof, is the production of our newly devised machinery and is made by an entirely new method and by a new system which we guarantee will give entire satisfaction, as it ensures production and much greater accuracy in the stapling of the blanks. By our new and improved methods either an alternate-cleat blank, or an eight-cleated blank, or even a cleatless blank may be made on one and the same machine, and practically no change is required in the machine when it is desired to change from one kind of blank to another. Use our new methods and give your customers the different kinds of boxes or box blanks they want.

Saranac wire-bound boxes can be made either with the cleated top or with the flexible, or uncleated top. Where the "bulge pack" is desired, the flexible-top Saranac wire-bound box makes an ideal package; this is the type so necessary for the packing of citrus fruits, and a great many vegetables.

The flexible top can be nailed to the end-cleats just like an ordinary box and still have the advantage of the wire binding.

All ends for Saranac wire-bound boxes are one-piece and complete because they are cleated. There are no loose pieces, misfit or broken parts to clutter up the shipping room.

All the work of setting up, nailing, if any, or stapling, the Saranac wire-bound box is done from the **outside.**

9 **Nine Concerns Have Been Granted the Use of Saranac Wirebound Equipment.**

The more you investigate the merits of the Saranac Wire-bound box and the high quality, dependability, and speed of the machines for making it, the more you will be interested.

Let Us Tell You More About It

Saranac Automatic Machine Corporation

Benton Harbor, Michigan, U. S. A.

Plaintiffs' Exhibit No. 22-A.

An Interesting Statement—

"As designers and manufacturers of scientifically constructed and high class stapling machinery, of all kinds and descriptions, we have been in the wire bound box machinery field for about twenty years.

Scientifically designed and constructed staplers, capable of running at high speed, are essential and are the vital element in any machinery of this kind. We designed and manufactured the first successful high speed wire bound box blank machine having chain feed and our machines have always been satisfactory and successful very largely because of the superiority of our staplers, and because of the excellence of our workmanship in general.

Our experience in the designing and manufacture of stapling machines of all kinds has been of a broad and comprehensive character, and some twenty years ago when we decided to include wire bound box machinery in our long list of stapling machines for various purposes, we of course gave the proposition the benefit of our wide experience in the designing and manufacture of stapling machines for the production of boxes and crates of various kinds. Our present output of wire bound box blank machines, and other machines for use in connection with the production of wire bound boxes, is the result of substantially twenty years' careful thought and study, and careful observation of the trend of the wire bound box business, with a view to insuring both quality and reduced cost of production, and high grade boxes as well.

We are now prepared to furnish machinery for the manufacture of either our alternate cleat wire bound box blanks, which are becoming more popular every day, or the full cleated box blanks, having eight cleats on each blank, or even the cleatless box blanks which are often necessary and desirable. Time and circumstances have shown that we are the logical builders of wire bound box machinery, because we are primarily designers and builders of high class stapling machinery of all kinds and descriptions. We not only offer you high class machines in the first instance, but we are prepared to give you the expert service, from time to time, wherever necessary, in the running of your machines and the organization of your shop, which we are naturally capable of giving because of our wide and long experience in connection with matters of this kind.

Circumstances have shown, and will show in the future, that we are the logical ones to build and maintain and keep in repair high class wire bound box blank machinery."

Saranac Automatic Machine Corporation

Benton Harbor, Michigan, U. S. A.

Plaintiffs' Exhibit No. 22 B

The new Saranac Wire-bound Box-blank Machines and processes will produce the various types of wire-bound box-blanks illustrated below—

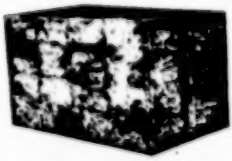
K. D.-Outside View
(All three types)

K. D.-Inside View
Saranac Intermittent Cleat
Wire-bound Box-blank.

K. D.-Inside View
Saranac Full Cleated
Wire-bound Box-blank.

K. D.-Inside View
Saranac Cleatless
Wire-bound Box-blank.

Set Up—Ready to Pack
(Either Cleatless blank or Intermittent Cleat blank.)



Packed, Closed and Ready to Ship.

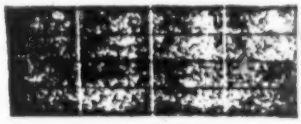
The more you investigate Saranac Wire-bound Boxes, the more you will be interested.

Saranac Automatic Machine Corporation

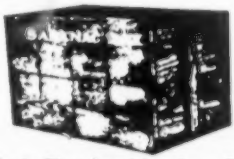
Benton Harbor, Michigan, U. S. A.

Plaintiffs' Exhibit No. 22-C.

The new Saranac Wire-bound Box-blank Machines and processes will produce the various types of wire-bound box-blanks illustrated below—

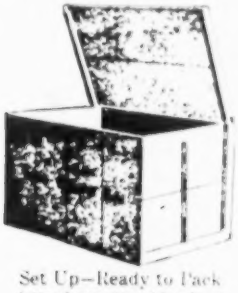


K. D.—Outside View
(All three types)



Packed, Closed and Ready to Ship.
All three types

K. D.—Inside View
Saranac Intermittent Cleat
Wire-bound Box-blank



Set Up—Ready to Pack
Either Intermittent Cleat Blank or Full Cleated Blank

K. D.—Inside View
Saranac Full Cleated
Wire-bound Box-blank

Set Up—Ready to Pack
Either Cleatless-blank or Intermittent Cleat Blank

K. D.—Inside View
Saranac Cleatless
Wire-bound Box-blank

The more you investigate Saranac Wire-bound Boxes, the more you will be interested.

Saranac Automatic Machine Corporation

Benton Harbor, Michigan, U. S. A.

Plaintiffs' Exhibit No. 22 D.

PACKAGES

Published Monthly in the Interest of the Wooden Package and Package Stock Industries

ESTABLISHED JANUARY 1898

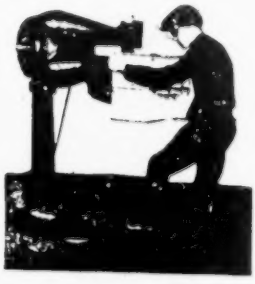
VOL. XXVIII ~ MILWAUKEE, WIS. ~ APRIL, 1925 ~ NO. 4

THE NUMBER OF USERS OF SARANAC WIREBOUND BOXES IS GROWING STEADILY

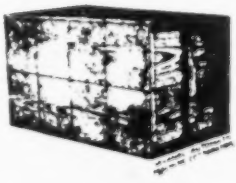
Saranac Full Cleated Wirebound Box-blank

Either of these blanks will set up like this:

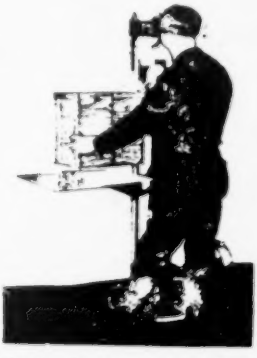
Saranac Intermittent Cleat Wirebound Box-blank



Stapling Ends in Full Cleated Blanks with Inside End Stitcher



The more you investigate Saranac Wirebound Boxes the more you will be interested



Stapling Ends Intermittent Cleat Blanks with Outside End Stitcher

Saranac Automatic Machine Corporation

Specialists in Package Machinery

Benton Harbor, Michigan

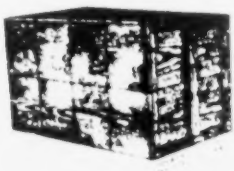
Plaintiffs' Exhibit No. 22 E.

THE NUMBER OF USERS OF SARANAC WIREBOUND BOXES IS GROWING STEADILY

Saranac Full Cleated Wirebound Box Blank

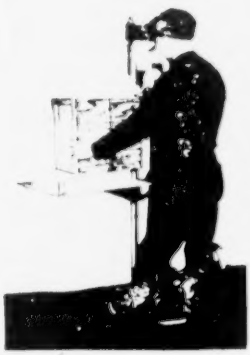
Either of these blanks will set up like this:

Saranac Intermittent Cleat Wirebound Box Blank



Stapling Ends in Full Cleated Blanks with Inside End Stitcher

The more you investigate Saranac Wirebound Boxes the more you will be interested



Stapling Ends Intermittent Cleat Blanks with Outside End Stitcher

Saranac Automatic Machine Corporation

Specialists in Package Machinery

Benton Harbor, Michigan

Plaintiffs' Exhibit No. 22-F.

The Saranac Wire-Bound Box
and
Machinery *for Its Manufacture*

K. D. Inside View

This box, the process of manufacture, and the machines for making it are patented.

Packed, Closed and Ready to Ship

Saranac wire-bound boxes and the machinery for producing them have been in use during the past five years.

Saranac wire-bound box equipment is not only mechanically the best on the market today, but also has the greatest capacity for low-cost production.

Boxes and crates for every purpose in which wire-bound construction may be desired can be made on Saranac machines under full patent protection.

Saranac wire-bound box-blank stitchers will operate perfectly at speeds even greater than the operators or stock feeders can lay stock in the carriers.

The Saranac End Stapler for setting up Saranac wire-bound boxes can be installed at a very low cost, and easily operated. It drives staples from the outside of the box.

Important Announcement

We are pleased to report that we are now prepared to furnish machinery for making any desired or known form of wirebound box blank. In other words, we are prepared to furnish machinery for either the Saranac alternate cleat blank which is giving such universal satisfaction everywhere, or the full cleated blank having eight cleats thereon, for those who desire this particular form of blank, or even the cleatless blank which is often preferred for certain kinds of merchandise. The eight-cleated blank, having two cleats on each and every section thereof, is the production of our newly devised machinery and is made by an entirely new method and by a new system which we guarantee will give entire satisfaction, as it ensures production and much greater accuracy in the stapling of the blanks. By our new and improved methods either an alternate-cleat blank, or an eight-cleated blank, or even a cleatless blank may be made on one and the same machine, and practically no change is required in the machine when it is desired to change from one kind of blank to another. Use our new methods and give your customers the different kinds of boxes or box blanks they want.

Saranac wire-bound boxes can be made either with the cleated top or with the flexible or uncleated top.

Where the "bulge pack" is desired, the flexible-top Saranac wire-bound box makes an ideal package; this is the type so necessary for the packing of citrus fruits, and a great many vegetables.

The flexible top can be nailed to the end-cleats just like an ordinary box, and still have the advantage of the wire binding.

All ends for Saranac wire-bound boxes are one-piece and complete because they are cleated. There are no loose pieces, misfit or broken parts to clutter up the shipping room.

All the work of setting up, nailing, if any, or stapling the Saranac wire-bound box is done from the outside.

9 NINE CONCERNS HAVE BEEN GRANTED THE USE OF SARANAC WIRE-BOUND EQUIPMENT

The more you investigate the merits of the Saranac Wire-bound box and the high quality, dependability, and speed of the machines for making it, the more you will be interested.

Let Us Tell You More About It

Saranac Automatic Machine Corporation

Benton Harbor, Michigan, U. S. A.

Plaintiffs' Exhibit No. 22-G. From Vol. XXVIII, No. 2, April, 1923, Issue.

An Interesting Statement

As designers and manufacturers of scientifically constructed and high class stapling machinery of all kinds and descriptions,—we have been in the wire bound box machinery field for about twenty years.

Scientifically designed and constructed staplers, capable of running at high speed, are essential and are the vital element in any machinery of this kind. We designed and manufactured the first successful high speed wire bound box blank machine having chain feed and our machines have always been satisfactory and successful very largely because of the superiority of our staplers, and because of the excellence of our workmanship in general.

Our experience in the designing and manufacture of stapling machines has been of a broad and comprehensive character, and some twenty years ago when we decided to include wire bound box machinery in our long list of stapling machines for various purposes, we of course gave the proposition the benefit of our wide experience in the designing and manufacture of stapling machines for the production of boxes and crates of various kinds. Our present output of wire bound box blank machines, and other machines for use in connection with the production of wire bound boxes, is the result of substantially twenty years careful thought and study, and careful observation of the trend of the wire bound box business, with a view to insuring both quantity and reduced cost of production, and high grade boxes as well.

We are now prepared to furnish machinery for the manufacture of either our alternate cleat wire bound box blanks, which are becoming more popular every day, or the full cleated box blanks having eight cleats on each blank, or even the cleatless box blanks which are often necessary and desirable. Time and circumstances have shown that we are the logical builders of wire bound box machinery, because we are primarily designers and builders of high class stapling machinery. We not only offer you high class machines in the first instance, but we are prepared to give you the expert service, from time to time whenever necessary, in the running of your machines and the organization of your shop, which we are naturally capable of giving because of our wide and long experience in connection with matters of this kind.

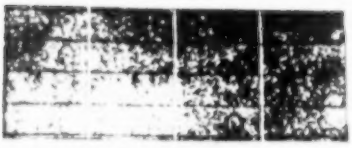
Circumstances have shown, and will show in the future, that we are the logical ones to build and maintain and keep in repair high class wire bound box blank machinery.

SARANAC AUTOMATIC MACHINE CORPORATION
Benton Harbor, Michigan, U. S. A.

Plaintiffs' Exhibit No. 22-H.

The New Saranac
Wirebound Box-Blank Machines and Processes

Will produce the various types of Wirebound box-blanks illustrated below

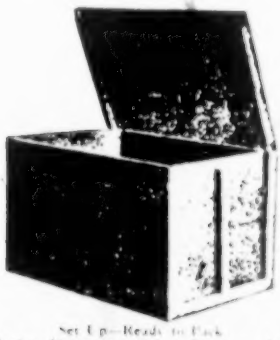


A. B.—Outside View
The Above Types

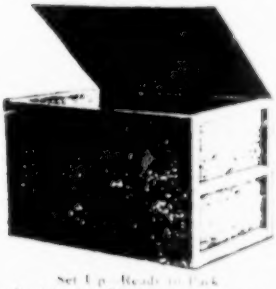
A. B.—Inside View
SARANAC INTERMITTENT CLEAT
Wirebound Box-Blank

A. B.—Inside View
SARANAC FULL CLEATED
Wirebound Box-Blank

A. B.—Inside View
SARANAC CLEATLESS
Wirebound Box-Blank



Set Up—Ready to Pack
Either Intermittent Cleat Blank or Full Cleated Blank



Set Up—Ready to Pack
Either Cleatless Blank or Intermittent Cleat Blank

Packed, Closed and Ready to Ship
Any of the Above Types

The more you investigate Saranac Wirebound Boxes the more you will be interested

SARANAC AUTOMATIC MACHINE CORPORATION

BENTON HARBOR, MICHIGAN

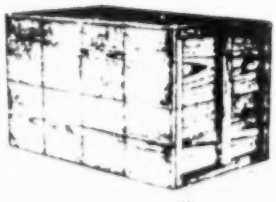
Plaintiffs' Exhibit No. 22-I.

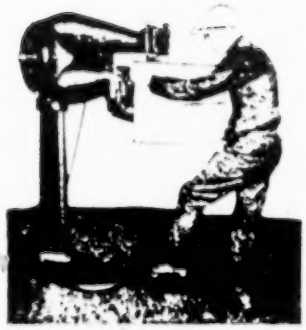
THE NUMBER OF USERS
OF
SARANAC WIREBOUND BOXES
IS
GROWING STEADILY

SARANAC
Full Cleated Wirebound Box blank

Either of these blanks
will set up
like this

SARANAC
Intermittent Cleat Wirebound Box blank





Stapling Ends in Full Cleated Blanks
with Inside End Stitcher

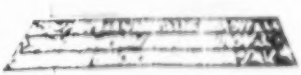
The more you investigate
SARANAC
Wirebound Boxes
the more you will be
interested

Stapling Ends in Intermittent Cleat
Blanks with Outside End Stitcher

SARANAC AUTOMATIC MACHINE CORPORATION
Specialists in Package Machinery
BENTON HARBOR, MICHIGAN

Plaintiffs' Exhibit No. 22-J.

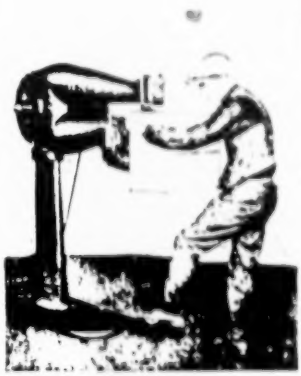
THE NUMBER OF USERS
OF
SARANAC WIREBOUND BOXES
IS
GROWING STEADILY



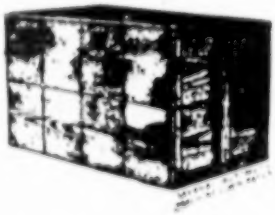
SARANAC
Full Cleated Wirebound Box blank

Either of these blanks will set up like this:

SARANAC
Intermittent Cleat Wirebound Box blank



Stapling Ends on Full Cleated Blanks with Inside End Stitcher



The more you investigate

SARANAC

Wirebound Boxes

the more you will be interested

Stapling Ends on Intermittent Cleat Blanks with Outside End Stitcher

SARANAC AUTOMATIC MACHINE CORPORATION

Specialists in Package Machinery

BENTON HARBOR, MICHIGAN

Plaintiffs' Exhibit No. 22-K.

PLAINTIFFS' EXHIBIT NO. 37.

PLAINTIFFS' EXHIBIT NO. 37.

Chase Turbine Mfg. Co.

Double End Cleat Tenoner
Gang Rip Saw Machine

Orange, Massachusetts, U. S. A.

(Cover)

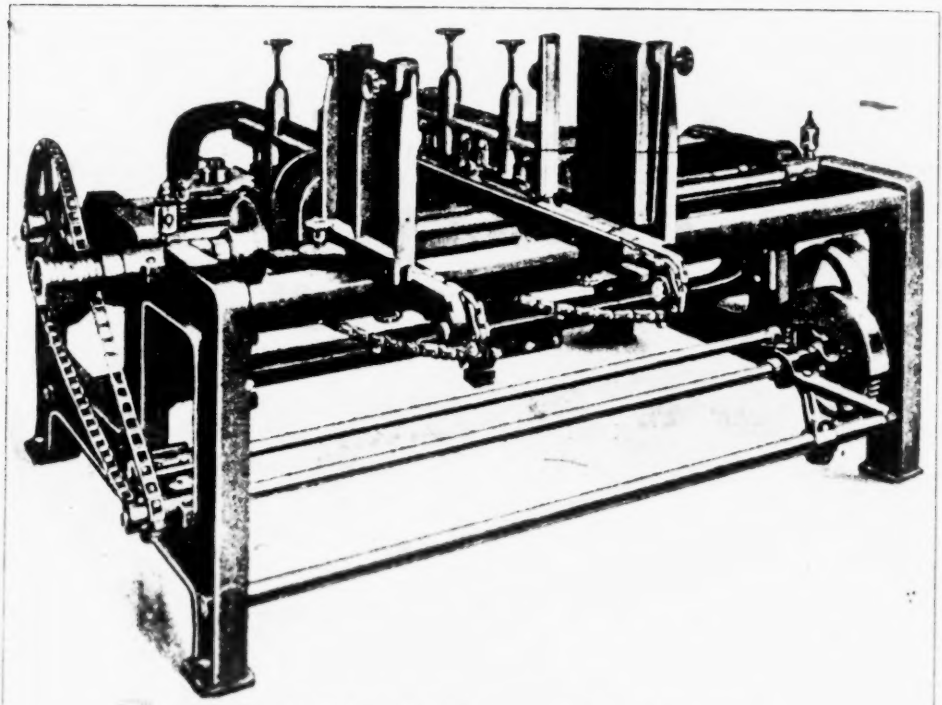
PLAINTIFFS' EXHIBIT NO. 37.

FOREWORD

OUR POLICY is to manufacture only one grade of machinery, that which is intended to be first class in every respect, and which will reduce the cost of production, by giving a greater output, still maintaining accuracy of the product. We are continually endeavoring to make our machines more efficient, and invite suggestions wherein changes can be made that will be beneficial to the user.

CHASE TURBINE MFG. CO.

PLAINTIFFS' EXHIBIT NO. 37.



Chase Double End Cleat Tenoner No. 221

(2)

DOUBLE END CLEAT TENONER

A MACHINE *designed particularly* to meet the requirements of the Wirebound and Cleated Panel End Box Manufacturers.

Frame. Built up strong and rigid, with heavy castings to withstand hard usage. Arbor boxes are cast in the frame.

Range. Machine is built in three standard sizes, 24 inch, 36 inch and 48 inch. Stock down to 3 inches in length between cuts may be worked.

Feed. Two speeds. Slow—20 lineal feet per minute. Fast—31 lineal feet per minute.

Cutter Heads. Are of the *inserted point design*, fitted with straight bevel points, which hold their size, and cut free and clean in all grades of stock. We furnish 150 extra points with each set of three cutters, which allows the *replacement of the points* in each cutter, eight times. Both heads are mounted on vertical spindles, which run on ball bearings immersed in oil. Cutters furnished with the machine, are for cutting 1-4 inch tongue and groove, unless otherwise specified.

Countershaft. *Entirely separate* and supported by heavy floor stands.

Trimming Saws. Each machine is fitted with two trimming saws, which are hung on a long arbor in front of the cutter heads, to trim the stock to exact uniform lengths. *One chainway, spindle with cutter head, and one trimming saw, are all in one unit*, and moved by means of a screw, with a hand wheel on the right of machine. *This feature allows the operator to change from one length cleat to another, without having to stop the machine*, saving considerable time, and increasing the capacity of the machine.

Feed and Feeding Chains. Stock is piled up in hopper, and the lugs on the feeding chains pick it out from the bottom. If narrow cleat width stock is to be handled, the hopper can be quickly removed. The *chains are composed entirely of steel*, insuring long wear, and great strength. Hold-down device will handle stock in *random widths* up to 12 inches, or in *narrow cleat widths*, equally as well.

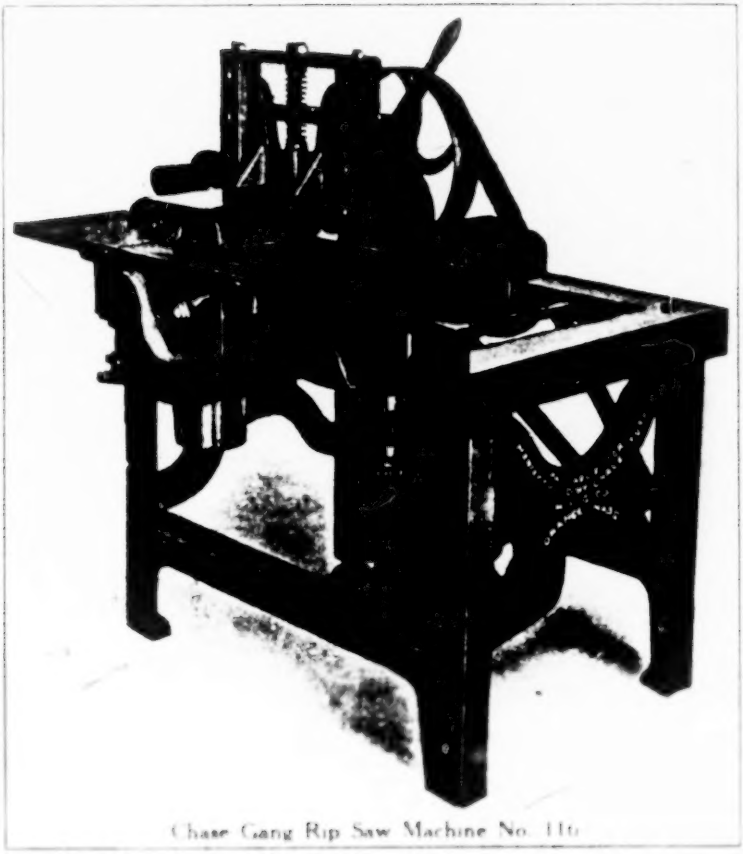
Machine
No. 221

Floor Space
5 x 7 ft.

Countershaft
Size of T. and L. Pulleys 12 x 8 Inches
Speed 1000 R. P. M.

Speed of Cutter heads
3000 R. P. M.

Shipping Weight
3250 lbs.



Chase Gang Rip Saw Machine No. 110

PLAINTIFFS' EXHIBIT NO. 1.

Inwood & Lavenberg Workholder Patent in Suit,
No. 1,128,144.

R. G. INWOOD & P. C. LAVENBERG.

COMBINED CARRIAGE AND FORMER FOR WIRE BOUND BOX MACHINES.

APPLICATION FILED OCT. 14, 1914.

1,128,144.

Patented Feb. 9, 1915.

2 SHEETS-SHEET 1.

Fig 4

Fig 1

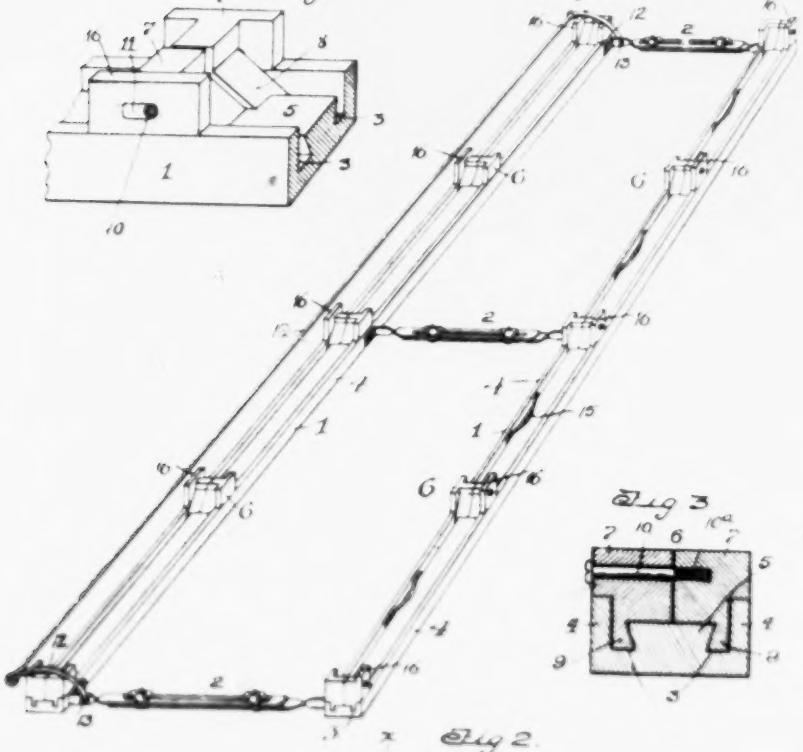
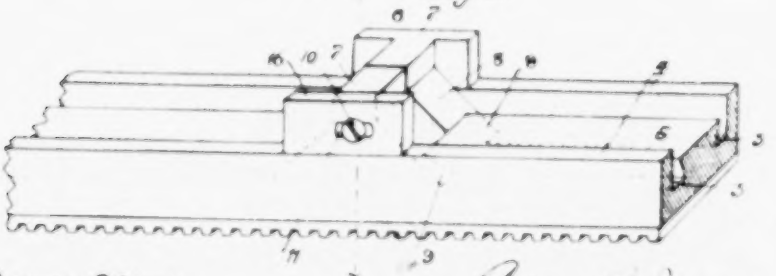


Fig 3

Fig 2.



George Allen
Ernest W. Hill
} Witnesses

Richard G. Inwood
Percy C. Lavenberg
Inventors

R. G. INWOOD & P. C. LAVENBERG.

COMBINED CARRIAGE AND FORMER FOR WIRE BOUND BOX MACHINES.

APPLICATION FILED OCT. 14, 1904.

1,128,144.

Patented Feb. 9, 1915.

2 SHEETS—SHEET 2.

Fig. 5

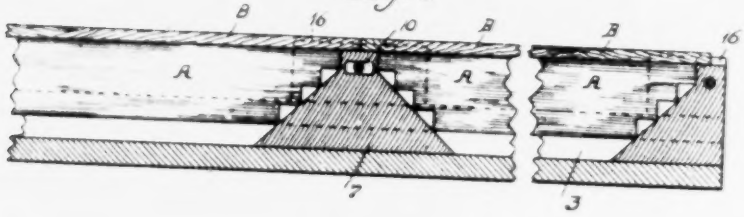


Fig 6

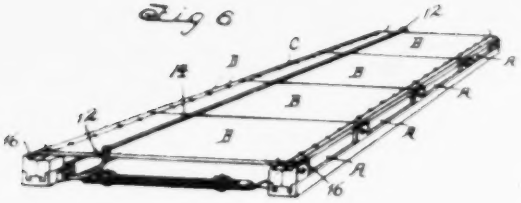


Fig. 7

Witnesses:
George Oltach
Bruce M. Bell

Richard G. Inwood
Perry C. Lavenberg
Inventors

[fol. 1115] United States Patent Office

Richard G. Inwood and Perry C. Lavenberg, of South Bend, Indiana, Assignors, by Mesne Assignments, to Wirebounds Patents Company, of Kittery, Maine, a Corporation of Maine.

Combined Carriage and Former for Wire-Bound-Box Machines

1,128,144. Specification of Letters Patent. Patented Feb. 9, 1915

Application filed October 14, 1904. Serial No. 228,443

To all whom it may concern:

Be it known that we, Richard G. Inwood and Perry C. Lavenberg, citizens of the United States, residing at South Bend in the county of St. Joseph and State of Indiana, have invented new and useful Improvements in Combined Carriages and Formers for Wire-Bound-Box Machines, of which the following is a specification.

This invention relates to the manufacture of wirebound boxes and pertains more particularly to work-controlling means for determining or maintaining desired relative positions of different parts of box blanks or blank sections preparatory to securing said parts together.

An object of the invention is to provide such work-controlling means for box blanks or sections of blanks formed of side sheet material, separate or individual cleats, and binding wires.

The invention is hereinafter described, for illustration, as embodied in a combined carriage and former arranged to hold in proper relative positions the side sheets and individual cleats for a sectional box blank in which provision is made for the overlapping of the edge of one side sheet by the margin of the next adjacent side sheet, at each lateral corner edge of the completed box. The illustrative construction shown in the drawings comprises means for determining a desired overlap margin of the side sheet in a manner and for purposes hereinafter more fully explained.

The carriage and former shown in the drawings may be used in conjunction with any practicable apparatus for

securing together the wire binding and other parts of blank sections. For instance a suitable machine for this purpose comprising a carriage and former such as that shown in the present drawings, is described and claimed in an application co-pending herewith, filed October 27, 1904; Serial No. 230,249.

In the drawings: Figure 1 is a perspective view of the illustrative carriage and former. Fig. 2 is an enlarged perspective view showing a portion of the channeled bar and adjustable spacing block slidably mounted thereon. Fig. 3 is a transverse section on the line X. X. of Fig. 2, showing the channeled bar, the divided spacing block and means for clamping the latter to the bar. Fig. 4 is a perspective view of the bar and spacing block mounted thereon, showing the adjustment of the separate block members relative to each other, so as to increase or decrease the intervening space between cleat ends as they are assembled on the carriage. Fig. 5 shows a longitudinal sectional detail of one of the bars comprising the carriage, with cleats positioned thereon and spaced apart the desired distance by the adjustable spacing blocks. Fig. 6 is a perspective view showing the members comprising a box blank assembled and positioned on the carriage and means for holding the sheets against displacement upon the cleats. Fig. 7 is a fragmental plan view of a cleat bar showing a cleat in position between the spacing blocks and means for holding the cleat firmly in the cleat bar.

The combined carriage and former preferably comprises two longitudinal plates or bars 1, which are connected and firmly held together parallel with each other, and at a distance apart corresponding to the length of the box sheets, or boards, by lengthwise adjustable cross bars 2, which are formed of sections centrally slotted and held together by clamping thumb screws, allowing the bars 1 to be adjusted so as to increase or decrease the width of the carriage. The longitudinal bars or plates are provided with dovetailed grooves 3, and side flanges 4, extending above the face of the bed plate 5, upon which the box cleats rest, the flanges 4 serving to position the cleats against lateral displacement.

A spacer or spacing block 6, comprising in the illustrative form two members 7, 7, is provided for maintaining adjacent cleats in their proper related positions and as par-

ticularly illustrated in Fig. 5, maintains an interval between adjacent cleats A, A, and projects upwardly between the cleat ends into engagement with the side sheets B, B. Thus where a spacer block occurs between the cleat ends, its upper portion serves, as will be apparent from Fig. 5, as a gage by which the operator may position a side sheet B, B when he introduces the same to the carriage or former. The spacer block members 7, 7 have inclined face portions 8, which terminate in extensions 9, 9 (Fig. 3), conforming with [fol. 1116] and connecting the dovetailed grooves 3, 3 of the bars 1, thus preventing vertical displacement of the spacing blocks but permitting movement of the blocks lengthwise of the bars for adjustment of the spacing blocks to suit different lengths of cleats. The block members 7, when adjusted are locked against displacement by clamping screws 10, which draw the parts together and clamp the extensions 9, to the bed plate 5, the said members normally sliding freely in said bed plate when not clamped thereto.

Referring to Fig. 5, it will be seen that the spacing block 7 in the middle of the figure, coöperates with the similar block at the right of the figure to form a sort of pocket in which a cleat rests; and the upper portions of said two blocks, extending into engagement with the side sheet B, provide gages by which the operator may position that side sheet B in relation to its cleat A. In other words, the two spacers blocks and the part connecting them, provide a former or work holder for a side unit or section of the box.

Referring again to Fig. 5, it will be observed that each of the sheets B, B, has a margin which projects beyond the end of its cleat. With this arrangement, as will be evident to those skilled in the art, when a binding wire is secured along the sheet, and the sections are then folded for instance, by folding the section on the right of Fig. 5, in a clock wise direction, the edge of the right hand sheet B may be turned under the margin of the lefthand sheet B while the projecting margin of the right hand sheet B will be folded against the end of the topmost step of the left-hand cleat A. Thus, when folded, as described, the projecting margin of the lefthand sheet B provides what we term an "overlap margin" by which one side sheet overlaps the other to form a tight closure. It will also be readily apparent to those skilled in the art that the overlap mar-

gin of the right hand sheet B of Fig. 5 is provided to mate with the specific form of cleat used.

When the side sheets are positioned with their edges a distance apart less than the thickness of the side sheet (as shown in Fig. 5), and the wire bindings are secured to the sheets so positioned, the folding of the blank, in which one sheet edge is forced under an adjacent overlap margin, puts the wires under heavy tension and holds them thus tensioned to maintain the overlapping sheets at the corner firmly held and tightly closed. Thus it will be seen that the particular spacing blocks 6, in their application to the specific construction of box parts shown in the drawings, each performs two offices besides that of positioning adjacent cleat ends in a coöperative foldable relationship; viz, to assist the operator in relatively positioning or gaging a cleat and side sheet to provide an overlap margin on one sheet of a width approximating the thickness of the sheet to be overlapped; and to assist the operator in gaging or positioning the respective side sheets with their edges in proper relationship, e. g., a distance apart not greater than the thickness of the overlapping sheet.

Since different thicknesses of sheets may require the cleat ends to be differently spaced apart for determining the overlap margin, the two sections 7, 7 of a spacing block 6, are made relatively adjustable by providing one member of each block with a slot, 11, through which projects the clamping screw 10 the end portion only of said screw being threaded to engage a threaded tap in the adjoining member of the spacing block.

The members 7 are each approximately one half the width of the bars 1 and therefore narrower than the cleats A. Thus by sliding the members upon each other to adjust them, and fastening them in adjusted position, they may be caused to space apart adjacent step mitered ends of the cleats, when the latter are placed in the bars, as required by the thickness of the lumber forming the sheet sections B.

In Fig. 2, the members 7 are shown in register whereby the cleats at their adjacent step mitered ends are positioned close together, while in Fig. 4 the members are adjusted relatively to increase the space between the adjacent step mitered ends of positioned cleats.

In order to hold the sheets against displacement upon the cleats as the carriage is passed through the stapling machines, two arms 12, are pivoted respectively to the end cross bars 2 at 13, and their free ends connected by a rod 14, which is swung over on to the sheets and rests thereon, the weight of the rod holding them, against displacement. See Fig. 6. As shown in Figs. 1 and 6, the arms 12 are pivoted to rock substantially in the planes of the adjacent edges of the side sheets B and consequently, as will appear to those skilled in the art, one or both said arms will serve as a stop or stops to position the side sheet material in relation to the carriage and the cleats held by the spacers 6. When said arms 12 are located as shown in Fig. 6 they stand in position to prevent any material movement of the side sheets lengthwise the cleats, while the stops 16 on the blocks 6 hold the side sheets against movement transversely of the cleats. Thus all the parts are held in proper relations to be wired together to form a flexible wirebound sectional blank. Since the sheets, as shown, in Fig. 5, may abut at their edges, the arms 12 may serve to hold all the sheets properly positioned. It is convenient and preferred, how-[fol. 1117] ever, to have the additional gaging means provided by the upwardly projecting parts of the blocks 6 (Fig. 5).

In practice the spacers or spacing blocks are adjusted on the cleat bars so as to conform to the width of the box to be manufactured, the length of the cleats determining the width of the box sides. This being accomplished the cleats A are positioned on the bars between the spacing blocks and the sheets B placed thereon so that the edges join or are quite close together, after which the retaining bar 14, is swung over so as to rest on the sheets, and hold them against displacement. This accomplished the carrier with its assembled box parts is passed through a stapling machine and the sheets stapled to the cleats over a stay or reinforcing wire, which holds the sections together when the blank is removed from the carrier. Fig. 6 also shows the stay wires C' and the staples D which straddle said wires after which the carriage is withdrawn from the machine and the completed box blanks removed therefrom, and the same operation repeated. It is obvious that several carriages or groups of spacing and gaging devices, such

as those described, may be introduced in succession to a single stapling machine so as to permit the box parts to be assembled upon one of said groups of parts while a preceding carriage or group is presenting its assembled box parts to a stapling mechanism.

In order to hold the cleats firmly in the channel and against the outer flange of the cleat bar, so that the cleats will register with the edges of the sheets, and to prevent wobbling of the cleats and possible displacement we provide plate springs 15, which are secured at one end to the inner flange of the bar or otherwise, and their free ends having engagement with said bar, the springs normally being distended or bulged in toward the center of bar, as shown in dotted lines Fig. 7. The spring being depressed as a cleat is inserted as indicated by full lines, thus firmly binding the cleat in position on the bar.

As will be apparent to those skilled in the art, this invention constitutes an important advance in the box making industry; especially in that it provides for the first time mechanical means for controlling side material and separate individual cleats (which may be made of cheap waste material) preparatory to applying binding wires thereto by which to form finished foldable wirebound box blanks or blank sections.

The invention is of course not limited to the specific construction, organization and mode of operation hereinbefore described for illustration.

What we claim as new and desire to secure by Letters Patent is:—

1. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; and means relatively to position the adjacent ends of said cleats in coöperative foldable relationship.

2. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a plurality of rows of cleats disposed substantially end to end in the respective rows; and means relatively to position the adjacent ends of the cleats in each row in coöpera-

tive foldable relationship and to aline transversely thereof the cleats in the respective rows.

3. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; side-material positioning means; and means relatively to position the adjacent ends of said cleats in coöperative foldable relationship.

4. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; and means, adjustable relatively to said positioning means, to be positioned at adjacent cleat ends—all constructed and arranged to position the cleats in a plurality of rows with adjacent cleat ends in each row in coöperative foldable relationship.

5. Work-controlling means for use in the manufacture of wirebound boxes, comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; and means relatively to position the adjacent ends of said cleats in coöperative foldable relationship, said last-named means being adjustable to suit cleats of different lengths.

6. Work-controlling means for use in the manufacture of wirebound boxes comprising, in combination, cleat-positioning means to receive a plurality of rows of cleats disposed substantially end to end; and cleat-spacing means relatively adjustable to suit individual cleats of different lengths to be received in said positioning means.

7. Work-controlling means for use in the manufacture of wirebound boxes comprising, in combination, cleat-positioning means to receive a plurality of rows of cleats disposed substantially end to end; and cleat spacing blocks adjustable relatively to each other and having relatively adjustable sections.

8. Work-controlling means for use in the manufacture of wirebound boxes comprising, in combination, cleat posi- [fol. 1118] tioning means to receive a plurality of rows of cleats disposed substantially end to end; and cleat-spacing blocks having sections relatively adjustable to vary the spaces between the cleats.

9. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, cleat positioning means to receive a plurality of rows of cleats disposed substantially end to end; means for relatively adjusting said cleat positioning means in a direction transverse to the rows of cleats; and means relatively to position the adjacent cleat ends in cooperative foldable relationship.

10. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, mechanism for positioning cleats substantially end to end in a plurality of rows, and positioning adjacent cleat ends in cooperative foldable relationship; and means for relative adjustment of said mechanism, for positioning rows of cleats at different distances apart.

11. Work-controlling means for use in the manufacture of boxes comprising, in combination, cleat positioning means to receive a succession of cleats; cleat spacing means to space endwise certain of said cleats; and means to clamp such cleats in position.

12. Work-controlling means for use in assembling box parts to be folded and secured together to form wire bound boxes comprising, in combination, side material and cleat supporting members arranged side by side; means relatively to position adjacent cleat ends in cooperative foldable relationship; means for holding the side material in position; and means for holding the cleats in position.

12. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat positioning means to receive a succession of cleats; and means to predetermine successive spaces between the adjacent cleat ends to position said ends in coöperative foldable relationship.

14. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a succession of cleats; means to predetermine successive spaces between the adjacent cleat ends to position said ends in cooperative foldable relationship; and means to position side material relatively to the cleats.

15. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; and means to be positioned between the ends of one cleat and the next to position said ends in coöperative foldable relationship.

16. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat positioning means to receive a plurality of cleats disposed substantially end to end; and means constructed and arranged to engage both of two adjacent cleats to maintain their adjacent ends in coöperative foldable relationship.

17. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, cleat positioning means for a plurality of rows of cleats; and cleat spacing means to predetermine successive spaces between the adjacent ends of cleats in a row, said means being arranged to position said ends in coöperative foldable relationship and to space said ends apart a distance not substantially less than the thickness of side material to be used with said cleats.

18. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, cleat-positioning means for a succession of cleats; and means to be positioned between the ends of one cleat and the next to position said ends in cooperative foldable relationship and to maintain between said ends a space not substantially less than the thickness of side material to be used with said cleats.

19. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes com-

prising, in combination, cleat positioning means for a succession of cleats; and cleat spacing means to space apart the ends of one cleat and the next, a distance not substantially less than the thickness of the end of a cleat to be overlapped by side material, to position said ends in cooperative foldable relationship.

20. Work controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat positioning means for a succession of cleats; and spacing means to space apart the ends of one cleat and the next, a distance not substantially less than the thickness of side material plus the thickness of a cleat end to be overlapped by side material, to position said ends in cooperative foldable relationship.

21. Work controlling means for use in the manufacture of boxes comprising, in combination, cleat positioning means to position individual cleats for a box side; and means to position side material relatively to said cleats to provide an overlap margin on at least one edge of said side material.

[1161,1119] 22. Work controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, cleat positioning means for a succession of cleats; means to space cleats apart endwise a distance not substantially less than the thickness of the intended side material, to position said ends in cooperative foldable relationship; and gaging means at a cleat interval by reference to which the corner line of the side material may be located in proper relation to said cleat interval.

23. Work controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, cleat positioning means to receive a plurality of cleats disposed substantially end to end; means relatively to position the adjacent ends of said cleats in cooperative foldable relationship; and gaging means by reference to which the corner line of the side material may be located to suit the foldable relationship of said cleat ends.

24. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, cleat-carrying means to receive a succession of cleats; and spacing means to be positioned between cleat ends to position said ends in coöperative foldable relationship and arranged to be carried with the cleats.

25. Work-controlling means for use in the manufacture of boxes comprising, in combination, two sets of cleat-positioning means arranged to hold a pair of cleats side by side, each set comprising means to hold a cleat against substantial endwise displacement; and side-material positioning means for relative positioning the side material and cleats to provide an overlap margin on at least one edge of said material.

26. Work-controlling means for use in the manufacture of wirebound boxes comprising, cleat-positioning means for a succession of cleats; means to position longitudinally with respect to the cleats, side material extending over and upon succession of cleats; and means acting upon a surface of the side material for maintaining the same in a proper plane relative to the cleats.

27. Work-controlling means for use in the manufacture of wirebound boxes comprising, in combination, a pair of cleat positioning means side by side and each for a succession of cleats disposed substantially end to end; and a series of cleat-spacing devices for each said positioning means, including one for an end cleat of a blank and one corresponding to each cleat interval, to position the end cleats of a blank and to position adjacent cleat ends in coöperative foldable relation, the spacing devices of one series being respectively aligned, transversely of said cleats, with corresponding devices of the other series, to position cleats in transversely aligned pairs for individual side sections of a box.

28. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning means to receive a succession of cleats disposed substantially end to end; means relatively to position the adjacent cleat ends in coöperative foldable relationship; and means to position side

material with at least one edge thereof in desired relation to certain of the cleats.

29. Work-controlling means for use in the manufacture of boxes comprising, in combination, cleat-positioning means to receive a succession of cleats disposed substantially end to end; means relatively to position adjacent cleat ends in cooperative foldable relation; and gaging means by reference to which corner lines of side material may be positioned in proper relation to the said cleat ends.

30. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes comprising, in combination, a series of groups of positioning means, each group for a side section of a box, and comprising means to position a pair of cleats in transverse alinement and means to position sectional side material with at least one of its edges proximate the ends of said cleats; and said groups of positioning means, being relatively arranged to position the ends of cleats of adjacent box sections in cooperative foldable relationship.

31. A former or work holder for positioning the parts of an individual side section for a sectional box, comprising, in combination, means to position a pair of individual cleats side by side and in transverse alinement; and means to position side material relatively to said cleats to provide an overlap margin on at least one side edge.

32. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat-positioning apparatus, for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in cooperative foldable relationship; and gaging means by reference to which corner lines of side material may be positioned in proper relation to the said cleat ends.

39. Work-controlling means for use in assembling box parts to be folded and secured together to form boxes comprising in combination, a series of groups of positioning means, each group for a side section of a box, and comprising means to position a pair of cleats in transverse alinement and means to position sectional side material with at least one of its edges proximate the ends of said

cleats; and said groups of positioning means being relatively arranged to position the ends of cleats of adjacent box sections in coöperative foldable relationship.

31. A former or work holder for positioning the parts of an individual side section for a sectional box, comprising, in combination, means to position a pair of individual cleats side by side and in transverse alinement; and means to position side material relatively to said cleats to provide an overlap margin on at least one side edge.

32. Work controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat positioning apparatus, for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in cooperative foldable relationship; and gaging means by reference to which corner lines of side material may be positioned in proper relation to said cleat ends.

33. Work controlling means for use in assembling box parts to be folded and secured together to form boxes, comprising, in combination, cleat positioning apparatus for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; and side material positioning means.

[fol. 1120] 34. In a work controlling means for use in assembling a sectional box blank, a plurality of means for positioning respective box sections, the said means being relatively constructed and arranged to position their respective box sections in coöperative foldable relationship.

35. A work controlling means for use in assembling the parts for a box blank comprising, in combination, cleat positioning mechanism for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position the adjacent cleat ends in coöperative foldable relationship; and means relatively to position the edges of side material at opposite ends of the blank in coöperative foldable relationship.

36. A work controlling means for use in assembling the parts for a box blank comprising, in combination, cleat-positioning mechanism for a plurality of cleats disposed sub-

stantially end to end, constructed and arranged relatively to position the adjacent cleat ends in cooperative foldable relationship, and means relatively to position the edges of side material at opposite ends of the blank to cause said edges to overlap when the blank is folded.

37. Work-controlling means for use in assembling box parts to be folded and secured together in making boxes, said parts including side material foldable along substantially parallel corner lines to provide box sides, and box members to be secured in pairs to said side material between and disposed transversely of corner lines the roof and floor the extremities of said corner lines, comprising, in combination, forming means to receive said members in pairs adjacent substantially end to end, constructed and arranged to space one said pair from another a predetermined distance permitting said pairs to be foldably connected and folded into a predetermined relation in forming a box, and means to position side material relatively to said pairs of members to be foldable therewith.

38. Work-controlling means for use in assembling box parts to be folded and secured together in making boxes, comprising, in combination, cleat positioning apparatus, for a plurality of cleats disposed substantially end to end, constructed and arranged to space said cleats apart endwise approximately the distance between the box ends to be formed, connected and folded into a predetermined relationship in forming a box, and means to position side material extending over said floor and cleats and the spaces between them.

39. Work-controlling means for use in assembling box parts to be folded and secured together in making boxes, comprising, in combination, cleat positioning means to receive a plurality of cleats disposed substantially end to end, and means to space endwise apart one said cleat for a given side of the box and another said cleat for a non-adjacent side of the box, a distance appropriate to dimensions of a desired intervening box side.

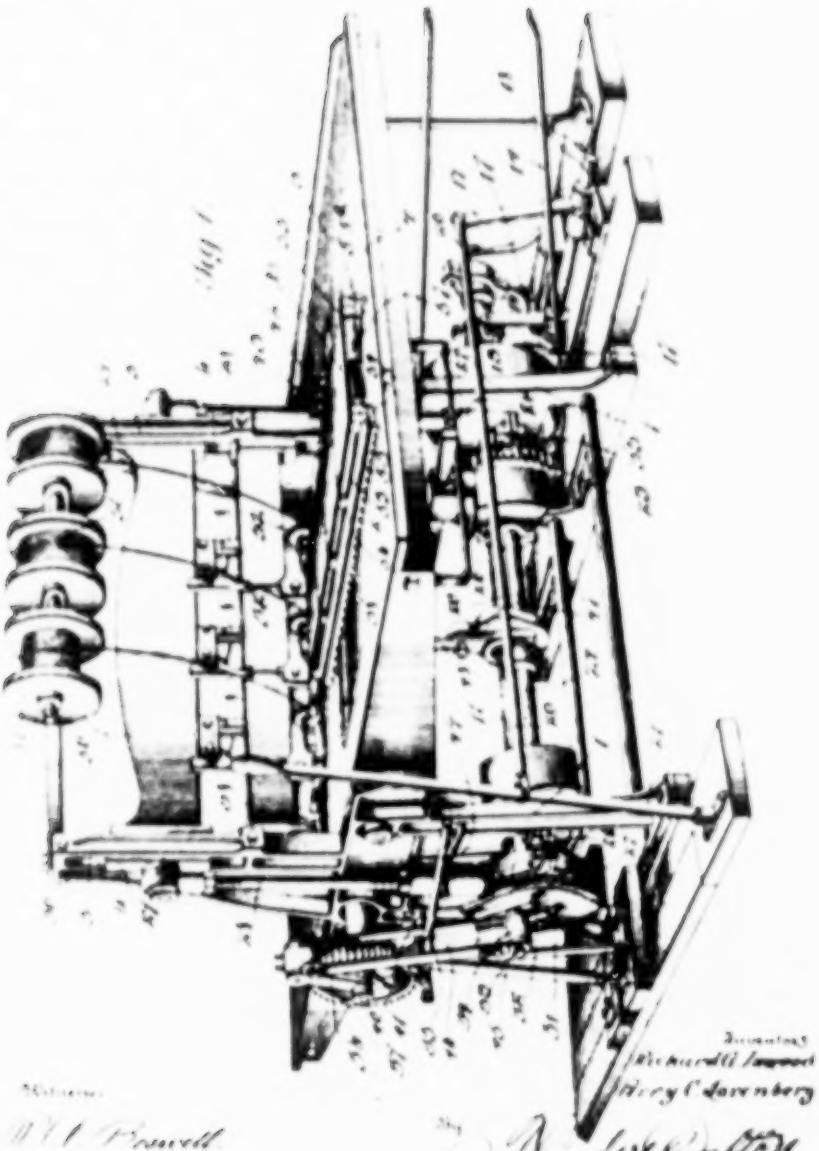
40. Work-controlling means for use in assembling box parts to be folded and secured together in making boxes, said parts including side material foldable along substantially parallel corner lines to provide box sides, and box members to be secured in pairs to said side material be-

PLAINTIFFS' EXHIBIT NO 2

Inwood & Lavenberg Machine Patent in Suit
No 1,128,145

1122

1,128,145. Patented Feb. 9, 1915



H. G. INWOOD & P. C. LAVENBERG.

MEANS FOR MAKING BOX BLANKS.

APPLICATION FILED OCT. 27, 1914.

1,128,145.

Patented Feb. 9, 1915.

3 SHEETS—SHEET 1.

Witnesses:
W. H. Powell.
George Ottach.

Inventors:
Richard G. Inwood
Perry C. Lavenberg
by Richard Dalton
Attorney

R. G. INWOOD & P. C. LAVENBERG.

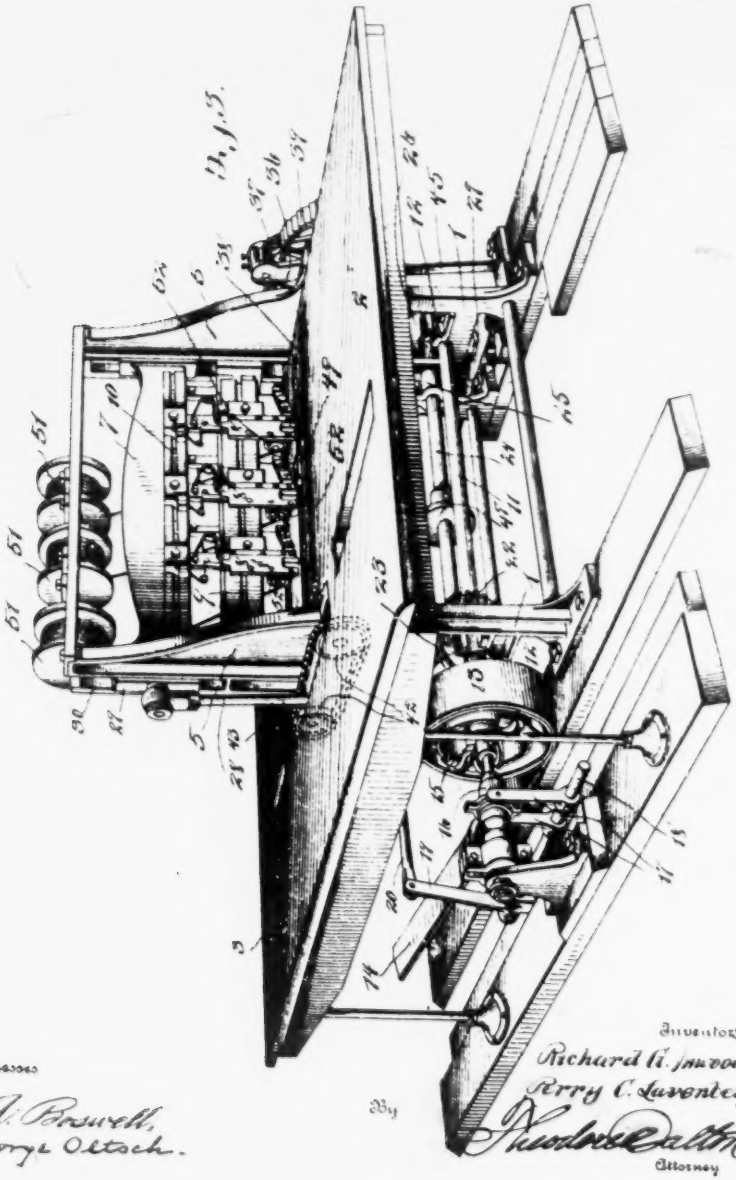
MEANS FOR MAKING BOX BLANKS.

APPLICATION FILED OCT. 27, 1904.

1,128,145.

Patented Feb. 9, 1915.

3 SHEETS—SHEET 1.



Witnesses

R. A. Boswell,

George Oltsch.

Inventors

Richard G. Inwood

Perry C. Lavenberg

By Thurlow Dalton

Attorney

tween and disposed transversely of corner lines thereof and near the extremities of said corner lines—comprising, in combination, positioning means, to receive said members in pairs disposed substantially end to end, constructed and arranged to space one pair for one box side, from another pair for another and non-adjacent box side, a predetermined distance appropriate to intended dimensions of an intervening side, permitting said pairs to be foldably connected and folded into a predetermined non-adjacent relation in forming a box; and means to position side material relatively to said pairs of members to be foldable therewith.

In testimony whereof we affix our signatures, in presence of two subscribing witnesses.

Richard G. Inwood, Perry C. Lavenberg.

Witnesses: George Oltsch, Grace M. Cole.

(Here follow side folios 1121-1126)

[fol. 1127] United States Patent Office

Richard G. Inwood and Perry C. Lavenberg, of South Bend, Indiana, Assignors, by Mesne Assignments, to Wirebounds Patents Company, of Kittery, Maine, a Corporation of Maine

Means for Making Box-Blanks

1,128,145. Specification of Letters Patent. Patented Feb. 9, 1915

Application filed October 27, 1904. Serial No. 230,249

To all whom it may concern:

Be it known that we, Richard G. Inwood and Perry C. Lavenberg, citizens of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented new and useful Improvements in Means for Making Box Blanks, of which the following is a specification.

This invention relates to the manufacture of wirebound boxes and pertains more particularly to combined fastener applying and work-controlling mechanisms for use in manufacturing box blanks, or sections of blanks, formed of side sheet material, separate or individual cleats, and re-inforcing wires arranged to be secured to the side sheet material and individual cleats.

In a machine embodying this invention, the fastener applying mechanism and the work-controlling means cooperate to produce box blanks or blank sections of the character suggested with rapidity and accuracy of relative adjustment of the side sheet material, individual cleats and wires which is extremely desirable.

The invention is hereinafter described for illustration, as embodied in an organized machine comprisiag fastener applying means, and work-controlling means arranged to present to said fastener applying means the parts of a blank for a box having side material and individual cleats. In the specific machine about to be described the fastener applying mechanism and the work-controlling means cooperate to drive staples astride of binding wires, through side sheet material and into the individual cleats, the side sheet material and individual cleats being presented in the proper relations to receive the wire and staples.

Figure 1 is a perspective view of the machine, showing one of the formers in a position to be fed through the machine. Fig. 2 is a similar view taken from the rear and one side of the machine. Fig. 3 is a perspective view of the machine taken from the side opposite to that shown in Figs. 1 and 2. Fig. 4 is a fragmentary perspective view of one type of box blank which may be made upon the illustrative machine.

In the drawings, 1 designates the framework of the machine and 2, a bed-plate or table which preferably extends beyond the frame on one side, as at 3, so that the formers or carriages 4 may be slid around from the rear to the operator in front. Extending above the bed-plate or table and forming part of the frame are standards 5, 5, to which are secured guides 6, in which a cross-head 7 sildes. This cross-head carries a plurality of staple formers and drivers 8, which are relatively adjustable in grooved guideways 9 and 10, so that each staple former and driver may be positioned opposite to each cleat of the blank and drive staples therein

as the blank is fed through the machine. These staple drivers and formers may be of any suitable construction, and as they in themselves form no part of the present invention, detailed description thereof is not given herein, it being sufficient to say that the rods or wires from which the staples are formed are fed or supplied from suitable reels or from a hopper containing the cut staple blanks. So far as the present invention is concerned it is not necessary that the devices shall form the staples, but merely that they shall drive staples as desired.

Mounted in the frame beneath the table, is the driving mechanism for the feed rollers and the staple formers and drivers, and this preferably consists of a driving shaft 11 journaled in suitable bearings 12, and having on one end a pulley 13 which is supplied with power from a belt 14, and in the hub of which is mounted a suitable clutch mechanism 15, that is operable to key the pulley and to release it from the shaft 11. This clutch operating mechanism is shown more clearly in Fig. 3, wherein a shoe expanding member 16 is connected by levers 17 to a rock shaft 18, on one end of which is an arm 19, having a pivotal connection with a push rod 20 that extends transversely beneath the table and connects with a shipping lever 21, as shown in Fig. 2. On the shaft 11 is a gear 22 that meshes with the gear 23 on a countershaft 24, mounted in suitable bearings 25. The ends of this shaft project through the frame, and [fol. 1128] on its projecting ends are eccentrics 26, which are provided with the usual eccentric sleeves 27, into which are fitted pitmen 28 that extend up and above the table. To the upper end of each pitman 28 is pivoted a sliding block 29 that moves in ways 30, formed on the outside of the standards 5, and these slide blocks 29 are connected with or form part of the cross-head 7, which carries the staple formers and drivers, so that the reciprocation of the cross-head is effected through the operation of the eccentric on the shaft 24. Also mounted on one end of the shaft 24 and rotatable therewith is a disk 31, on the outer face of which is a grooved radially disposed socket or keeper 32 in which is adjustably mounted a pin 33. On this pin is a sleeve 34, and to the sleeve is secured a pitman 35. The upper end of this pitman 35 is pivoted to a swinging or oscillatory frame 36, connected therewith. The instrumentali-gravity pawls or dogs 37. The pin 33 is always adjusted in the keeper 32

so as to be disposed eccentrically on the disk 31 and thereby impart a gyratory motion to the sleeve and an oscillating motion to the frame 36, connected therewith. The instrumentalities operating in this manner serve to impart a progressive step by step or intermittent feed to a pair of toothed feed rollers 38, which are mounted beneath the table in front and behind the staple formers and drivers and are preferably of such length as to extend entirely across the bed plate between the standards 5, so that the formers, which are laterally adjustable and which form the subject matter of a co temporaneous application, may be engaged by and fed through the machine, as will appear hereinafter. On the shaft of one of these feed rollers is a ratchet wheel 39, the teeth of which are arranged to be engaged by the gravity pawls 37 of the frame 36, and as each pawl is of different length, there will always be one or more in intimate contact with one of the teeth of the ratchet wheel and thereby prevent any lost motion in the feed of the material through the machine.

40 designates an arm secured to the frame projecting outwardly therefrom and having on its outer end a plurality of pawls 41, each of different length with their rear ends weighted so as to hold the front ends into engagement with the teeth of the ratchet wheel 39 and prevent retrograde movement thereof. The opposite ends of the shafts of the feed rollers are fitted with sprockets 42 that are connected by a sprocket chain 43, whereby both feed rollers will move in unison.

In order to give an initial or preliminary feed to the toothed rollers 38, so as to bring the box blank in a convenient position beneath the staple drivers for the insertion of the first staples suitable mechanism is provided for manually adjusting the ratchet wheel 39. This mechanism consists of a lever 44, pivoted to a standard 45 and having a dog 46 arranged to be engaged with the teeth of the ratchet wheel when the lever is moved upwardly by the operator, and thus a preliminary feed is given to the ratchet wheel independently of the vibrating frame 36. Obviously the hand-lever 44 may be manipulated as desired during the progress of the power-operated feed, in order to vary or modify said power-feed or the steps thereof for any desired purpose.

On the shaft 24, about the center thereof, is an eccentric 47, the pitman 48 of which is connected with a suitable clencher plate, the anvils 49 of which project through the openings in the bed plate, beneath the staple-drivers, and this eccentric 47 is so arranged as to raise the anvils when the staple is driven, and thereby clench the ends of the latter on the inside of the box blank.

Mounted on a rod 50 at the top of the frame are a plurality of wire reels or spools 51, the wires of which constitute the strengthening or binding wires of the box. These wires are passed around the rollers 52 on the staple formers and drivers and then passed beneath the latter to be straddled by the staples as they are driven into the sheets and cleats.

The feed rollers 38 project through transverse openings in the bed-plate just far enough to engage with the rack bars 53 on the carriage or formers 54, as shown in Fig. 1. As the former or carriage is laterally adjustable for boxes of different sizes, and as the feed rollers extend entirely across the bed-plate, the rack bars on the sides of the former are always adapted for engagement with the feed rollers, so that adjustment of the latter is obviated. The former or carriage, although forming the subject matter of a co-temporaneous application filed October 14th, 1904, Serial No. 228,443, will be described briefly as consisting of longitudinal side bars 55, that are preferably provided with adjustable spacing blocks 56 which separate the cleats and hold them against endwise displacement. The side bars are connected by slotted cross bars 57, which may slide one upon the other to increase or decrease the width of the former which is equal to the length of the completed box. Each of the side-bars 55 is provided on its upper surface with a longitudinal groove 55' in which the blocks 56, which are preferably step-mitered at their ends to correspond with the step-mitered ends of the cleats, are mounted. A further function of the grooved bar 55 is to receive the cleats, which fit into the grooves between the groove-walls, and are thus held against lateral displacement during the stapling operation, springs on the bars 55, as described [fol. 1129] in the applicants' co-pending application referred to, projecting laterally into the grooves to engage the cleats to press against them and thereby supplement the bars 55 in holding the cleats against lateral displacement.

By the use of our improved former, small pieces of stock

may be utilized, inasmuch as each section of the cleat A may be clamped in the side bars of the former and the sheet B may be composed of separate pieces suitably clamped upon the cleats preparatory to being secured thereto, and as the joint of the cleats is formed by step mitering this step miter may be formed on the ends of each section before it is positioned in the former.

The operation of the machine is as follows:

A number of formers are made ready by assembling the cleats and sheets therein, and as fast as the parts are secured together by the machine, the completed blank may be removed and a new set of cleats and sheet sections supplied to the former, which is then slid around the extension 3 of the bed plate to the front of the machine, where it may be again passed through to be operated upon by the staple drivers, thus allowing the use of a plurality of formers and carriages and the assembling of the box materials and feeding of the carriages to the machine in rapid order. When the first former is ready to be fed into the machine, the lever 44 is raised and by means of the dog 46, the ratchet wheel 39 may be rotated to impart initial feed to the feed rollers 38; thus bringing the former with the blank material, into proper position for receiving the first staple, which position is such as to prevent a staple being driven at a point adjacent to the miter of the cleats. The initial feed having been made, the shipping lever 21 is pulled to rock the shaft 18, and through the medium of the levers 17 and spreader 16, the shoes 15 of the clutch are brought into engagement with the flange on the pulley 13. The pulley is now made fast to the driving shaft 11 and through the gearing 22 and 23, the shaft 24 is continually rotated. The eccentrics 26 on the ends of this shaft 24 operate the pitman 28 and reciprocate the cross-head 27 of the staple formers and drivers. At the same time the disk 31 on the end of the shaft 24 is rotated, and it being premised that the pin 33 has been previously adjusted in the keeper 32 to impart the desired throw to the vibrating frame 36, which controls the rotation of the feed rollers 38, the upward movement of the frame 36 will by the engagement of the pawls 37 with the ratchet wheel 39, impart a partial rotation to the latter and to the toothed feed roller mounted on the shaft thereof. Upon the down stroke of the vibrating frame 36, the pawls 37 will

slide over the teeth of the ratchet and the latter will be prevented from turning by the engagement of the weighted pawls 41 therewith, and thus retrograde movement prevented.

The parts are so arranged with relation to each other that the staple formers and drivers alternate in their action with the feed mechanism, so that the box blank will be at a stand still, while the staples are being driven, but when the staples are driven, the eccentric 47 which controls the up and down movement of the anvils 49 of the clencher plate will operate to raise the latter, and when the parts have been secured together, and the binding wires which are supplied from the reels 51, stapled to the outside of the sheet adjacent to the cleat, a blank substantially as shown in Fig. 4, is formed in which A are the cleats; B the sheet; C, the binding wire; and D, the staples. This blank when bent into rectangular shape forms the sides of a box.

The present machine, as illustrated, is provided with three stapling devices 8, at least two of which are laterally adjustable for blanks of different widths. For short boxes only the two outer staplers need operate to drive staples over two binding wires through the edges of the sheet into the cleats, to form blanks of the type shown in Fig. 4. For long boxes the blanks may be strengthened with intermediate binding wires fastened only to the sheets by staples clenched at the under sides of the sheets against the anvil 49. The descent of the anvil, between stapling operations, permits the slotted cross-bars 57 of the carriages, or formers, to pass without obstruction from the anvil.

We wish it to be understood that this invention is not to be limited to the use of removable carriages or formers such as described, and which are in the nature of adjuncts applicable to the wire-feeding and stitching machine. Any means for positioning the separate parts of the blank-material in proper relation, as broadly defined in the claims, may be substituted for the formers, or carriages, described, whether removable from and replaceable in the machine, or otherwise. In operating the apparatus shown and described, the carriages or formers may be fed into the machine one after the other in a manner to obviate the necessity of stopping the machine after each blank is stitched. In this way, an endless chain of cleat and sheet holders and

positioners, with the material thereon, may be caused to pass between the bed frame and stapling devices, and keep the machine working to its fullest capacity.

It will be seen that the present invention embodies a machine that can be manufactured with comparatively lit the expense and at the same time increase its capacity for [fol. 1130] the production of box blanks.

The simplicity of the machine, always a ruling desideratum in the field of manufacture, is such as to enable the same to be operated and manipulated by unskilled workmen.

As will appear to those skilled in the art, this invention constitutes an important advance in the box-making industry; especially in that it provides for the first time mechanical means for controlling side material and separate individual cleats, preparatory to applying binding wires thereto, in combination with means for foldably connecting said parts to form finished foldable wire-bound box blanks. The invention is, of course, not limited to the specific construction, organization and mode of operation hereinbefore described for illustration.

What we claim as new and desire to secure by Letters Patent is:—

1. Means for making a box blank by stapling together sheet-sections, cleat-sections and binding-wires, comprising in combination with a machine carrying staple-drivers with attendant binding-wire guides, and provided with operating means for the staple drivers, of means for receiving and positioning the cleat-sections of the blank in properly spaced end-to-end relation to each other, comprising cleat holders having spacing stops positioned along them correspondingly with the lengths of the respective sheet-sections and means engaging and moving the cleat holders with the inserted cleats across the staple drivers and wire guides.

2. Means for making a box blank by stapling tog-ther sheet-sections, cleat-sections and binding-wires, comprising in combination with a machine carrying staple-drivers with attendant binding-wire guides and provided with operating means for the staple drivers, of means for holding the sheet-sections and for receiving and positioning the cleat-

sections in properly spaced end to end relation to each other, comprising sheet section and cleat-section holders, having spacing stops for the cleat-sections positioned along them correspondingly with the lengths of the respective sheet sections and means engaging and moving the cleat holders with the inserted cleat-sections and the sheet-sections across the staple drivers and wire guides.

3. A machine for making metal-bound box-blanks, comprising means for guiding the metallic binding onto the blank, suitable means for inserting fastening devices into the blank to secure the metallic binding thereto, and to secure cleats to the inner surface of the blank, a power operated feeding device, and a portable work-holder adapted to carry the blank through the machine, said workholder being adapted to be connected with said feeding device and, when so connected, constituting a traveling guide for insuring a straight course of travel for the blank, and also constituting a medium through which a proper feeding movement is communicated through the cleats to the said binding, in unison with the motion of the blank, said machine also comprising means for supporting the work-holder in position for movement in a straight line, and the parallel side postions of said work-holder being provided with means for holding the said cleats end to end, in parallel and fixed relation thereto, and for preventing the binding from causing endwise displacement of the cleats thereon

4. A machine for making metal-bound box-blanks, comprising means for guiding or directing the metallic binding onto the blank, means for driving staples into the blank to secure the said binding thereto, and to secure cleats to the inner surface of the blank, a power operated feeding device, and a plurality of interchangeable work-holders adapted to be loaded with the material from which the blanks are formed and then passed successively through the said machine, each work-holder being adapted to be connected with said feeding device and, when so connected, constituting a traveling guide for insuring a straight course of travel for the blank, and also constituting a medium

through which the said feeding device communicates motion through the cleats to the said binding, in unison with the motion of the blank, said machine also comprising means for supporting the work-holders in position for movement in a straight line, and the side portions of each work-holder being provided with means for holding the said cleats end to end, in parallel and fixed relation thereto, and for preventing the binding from causing endwise displacement of the cleats thereon.

5. A machine for making metal-bound box-blanks, comprising means for directing the metal binding to the surface of the blank, means for inserting fastening devices to secure the metallic binding to the blank, and to secure cleats to the inner surface of the blank, a power operated feeding device, and a work-holder adapted to support the work, the said work-holder having parallel portions adapted to receive the cleats of the blank and provided with racks adapted to engage said feeding device, the said work-holder when connected with said feeding device, constituting a traveling guide for insuring a straight course of travel for the blank, and also constituting a medium through which motion is communicated through the cleats to the said binding, in unison with the motion of the blank, said machine also comprising means for supporting the work-holder in position for movement in a straight line, and [fol. 1131] the side portions of said work-holder being provided with means for holding the said cleats in parallel and fixed relation thereto, and for preventing endwise displacement of the cleats thereon.

6. A machine for making metal-bound box-blanks, comprising means for directing the metal binding to the surface of the blank, means for inserting fastening devices to secure the metallic binding to the blank, and to secure cleats to the inner surface of the blank, a power operated feeding device, and a longitudinally traveling work-holder adapted to support the work, said work-holder having parallel side portions adapted to receive and hold the parallel cleats of the blank, and adapted to serve as traveling guides to keep the motion of the cleats direct, the side portions of said work-holder having power transmitting connection with the said feeding device, and the said work-holder, when operated

by said feeding device, constituting a connection by which motion is communicated through the cleats to the said metallic binding, said machine also comprising means for supporting the work-holder in position for movement in a straight line, and the side portions of said work-holder being provided with means for holding the said cleats in parallel and fixed relation thereto, and for preventing endwise displacement of the cleats thereon.

7. A machine for making metal-bound box-blanks, comprising means for directing the metal binding to the surface of the blank, means for inserting fastening devices to secure the metallic binding to the outer surface of the blank, and to secure cleats to the inner surface of the blank, a traveling work-holder having parallel side portions adapted to hold the cleats end to end, and provided with means for engaging the ends of the cleats, each side portion having springs for holding the cleats in place, and power transmitting connection for operating said work-holder, the side portions of the work-holder constituting sliding guides for keeping the endwise motion of the cleats direct, and also constituting connections by which power or motion is communicated by the machine through the cleats to the said binding.

8. A machine for making wire-bound box-blanks, comprising reels on which the binding-wires are carried, means for inserting fastening devices to secure the wires to the outer surface of the blank and to secure cleats to the inner surface thereof, and means including a portable frame-like work-holder for pulling the wires off from the reels, and for communicating a step-by-step motion to the said cleats and wires and other portions of the blank, said work-holder being adapted to be loaded with materials and then inserted in the machine, said machine also comprising means for supporting the work-holder in position for movement in a straight line, and the side portions of said work-holder being provided with means for holding the said cleats in parallel and fixed relation thereto while subject to the drag or back-pull of the binding wires.

9. A machine for making metal-bound box-blanks, comprising reels in which the metallic binding is carried, means for inserting fastening devices to secure cleats to the under side of the blank, and to fasten the binding to the upper sur-

face of the blank, and means including parallel horizontally and longitudinally traveling members for imparting a step-by-step endwise motion to the said cleats and wires in unison with the balance of the blank, said traveling members being adapted to support and move and guide the cleats and prevent the drag or back-pull of the metal binding from causing endwise displacement of the cleats thereon.

10. A machine for forming box-blanks by fastening sheets and strengthening wires to reinforcing cleats, comprising guides for the cleats, said guides comprising parallel longitudinally traveling members adapted to move in unison, engage and hold the cleats to straight lines of travel, and prevent the drag or back-pull of the metal binding from causing endwise displacement of the cleats thereon, intermittent feed mechanism for advancing the cleats longitudinally with their guides and with sheet material through the machine, an intermittingly actuated staple driver adjacent to each path for the cleats, alternating in its action with said feed mechanism to fasten the sheet material and wires, by successive operations, to the cleats, and means for guiding the strengthening wires between the sheet material and the staple drivers.

11. A machine for forming box-blanks by fastening sheets and strengthening wires to reinforcing cleats, comprising guides for the strengthening wires, guides for the cleats, said cleat-guides comprising parallel traveling members adapted to engage and hold the cleats to straight lines of travel, and prevent the drag or back-pull of the metal binding from causing endwise displacement of the cleats thereon, intermittent feed mechanism for advancing the cleats longitudinally with their guides and with sheet material through the machine, an intermittingly actuated staple driver and a guide for a strengthening wire adjacent to each path for the cleats, the staple drivers alternating in this action with the said feed mechanism to fasten the strengthening wires and sheet material, by successive operations, to the cleats at intervals in the direction longitudinally of the cleats.

[fol. 1132] 12. A machine for forming box-blanks by fastening sheets and strengthening wires to reinforcing cleats, comprising intermittingly actuated staple drivers, guides

for the strengthening wires, guides for the cleats, said cleat-guides comprising parallel rigidly connected longitudinally traveling members adapted to engage and hold the cleats to straight lines of travel, and to prevent the drag or back-pull of the metal binding from causing endwise displacement of the cleats thereon, guides for the strengthening wires, and intermittingly actuated feed devices for advancing the sheet material and strengthening wires and cleats with the guides longitudinally below the said staple drivers, the said feed devices alternating in their action with the said staple drivers.

13. A machine for forming box-blanks by fastening sheets and strengthening wires to reinforcing cleats, comprising guides for the strengthening wires, guides for the cleats, said cleat-guides comprising parallel traveling members adapted to engage and hold the cleats to straight lines of travel, and prevent the drag or back-pull of the metal binding from causing endwise displacement of the cleats thereon, intermittent feed mechanism for advancing the cleats and their guides longitudinally with sheet material through the machine, a series of intermittingly actuated staple forming and driving mechanisms alternating in their action with the said feed mechanism, disposed above the path of the sheet material and cleats and in a horizontal line at right angles to said path, and means for guiding strengthening wires below the staple drivers, whereby the strengthening wires and sheet material, by successive operations of the staple drivers, are fastened to the cleats at intervals in the direction longitudinally of the cleats.

14. A machine for making metal-bound box-blanks, comprising means for directing the metal binding to the surface of the blank, means for inserting fastening devices to secure the metallic binding to the upper surface of the blank, and to secure cleats to the under side of the blank, together with means including a traveling work-holder for imparting a step-by-step motion to the said binding in unison with the motion of the blank, and in a direction endwise of said cleats, said work-holder being adapted to hold the cleats end to end, and being provided with projections extending between and engaging the ends of the cleats.

15. Means for making box-blanks, including a portable carriage constituting an adjunct applicable to a blank-stitching machine, together with guides for directing binding wires onto the blank, said carriage being provided with parallel cleat-supporting and guiding members for spacing the cleats with relation to each other and with means for holding the cleats against endwise displacement while subject to the drag or back-pull of the wires.

16. Means for making box-blanks, comprising in combination a machine provided with staple drivers, operating means therefor, a frame-like carriage constituting an adjunct applicable to the machine and insertible into and removable therefrom, the carriage constituting means for positioning and holding assembled blank material in proper relation for a box-blank, and for guiding the same, feed mechanism in the machine for engaging and moving the inserted carriage below the staple drivers, and means for guiding binding wires onto the blank, said carriage being provided with means for holding the cleats against endwise displacement while subject to the drag or back-pull of the wires.

17. A machine for making wire-bound box-blanks having reinforcing cleats, comprising guides for directing the binding wires onto the blank, stapling devices for inserting staples to fasten the binding wires and cleats to the blank material, feed mechanism for advancing the blank materials step-by-step, guides for the cleats adapted to hold the cleats end to end in a plurality of parallel rows, and blocks interposed between the ends of the cleats in each row, said blocks adapted to keep the ends of the cleats properly separated while the materials are being advanced by the feed mechanism.

18. A machine for making wire-bound box-blanks having reinforcing cleats, comprising guides for directing the binding wires onto the blank, stapling devices for inserting staples to fasten the binding wires and cleats to the blank material, feed mechanism for advancing the blank materials step by step, guides adapted to hold the cleats end to end in a plurality of parallel rows, and miter blocks in said guides and interposed between the ends of the cleats in each

row, each block being adapted to engage the mitered ends of the cleats.

19. In a machine for the purpose specified, the combination of means for guiding the binding wires onto the blank, guides for the cleats of the blank, power operated feed mechanism for advancing the blank, means for stapling the binding wires and the other parts of the blank together, and means on said cleat-guides for preventing the drag or back-pull of the binding wires from causing displacement of the blank relatively to the guides, and for keeping the cleats properly positioned end to end but slightly separated, while the blank is advancing through the machine.

20. A machine for making metal-bound box-blanks, comprising means for guiding the binding-wires on to the blank, suitable means for inserting fastening devices into the [vol. 1133] blank to secure the metallic binding thereto, a power operated feeding device, and work-controlling means adapted to carry the blank through the machine, said work-controlling means being adapted to be connected with said feeding device and when so connected to serve as a medium through which the said metallic binding is given a proper feeding movement.

21. A machine for making metal-bound and cleat-reinforced box-blanks, comprising means for guiding the binding-wires onto the blank, suitable means for inserting fastening devices into the blank to secure the metallic binding thereto, a power operated feeding device, and a portable work holder adapted to carry the blank through the machine, said work-holder being adapted to be connected with said feeding device and when so connected to serve as a medium through which the said metallic binding is given a proper feeding movement, the said machine also comprises a movable clench-block or anvil, and means for moving said clench-block or anvil into and out of engagement with the under side of the blank to clench the staples that secure the middle or intermediate binding-wire to the blank, said clench-block or anvil being arranged in the path of portions of the said work-holding means, but adapted and timed to move out of the way and permit the same to pass.

22. The combination, in a machine for making wire-bound and cleat-reinforced box-blanks, of a plurality of parallel

and longitudinally traveling members, means on said members for holding the cleats against lateral displacement therefrom, means on said members for separating and holding the cleats against endwise displacement thereon, operative mechanism for producing a simultaneous actuation of said members, in the same direction, means for supplying binding wires, and means for securing said wires to the cleats, whereby said members sustain the drag or pull of said wire.

23. A machine for making box blanks by wiring together the previously unconnected side sections of each blank, with separate sheets and cleats for each section, comprising means for maintaining the cleats in parallel rows, devices for producing successive spaces between the ends of the cleats in each row, and mechanism for wiring the previously unconnected sections of the blank together while the cleats thereof are held in spaced relation by said devices.

24. A machine for making box blanks by wiring together the previously unconnected side sections of each blank, with separate sheets and cleats for each section, comprising means for maintaining the cleats in parallel rows, devices for producing successive spaces between the ends of the cleats in each row, mechanism for wiring the previously unconnected sections of the blank together while the cleats thereof are held in spaced relation by said devices, and instrumentalities for causing said devices and blank materials to have a step by step feeding motion, said mechanism thereby fastening said materials together by successive operations on each blank.

25. A machine for making box blanks comprising work controlling means having cleat positioning means to receive sectional cleats in parallel lines, and spacing means to space cleats endwise from each other in each line, preparatory to connecting said cleats in their spaced relation, said work controlling means being arranged to receive side material to be secured to said cleats; fastener applying means for securing binding means to the side material and cleats controlled by the work controlling means; means for relatively feeding the work controlling means and fastener applying mechanism for securing said binding means across the in-

tervals between said spaced cleats to secure them together in their spaced relations to form a foldable blank.

26. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; means relatively to position the adjacent ends of said cleats in coöperative foldable relationship; and mechanism for securing side material to the cleats and foldably connecting the cleats in said relationship.

27. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a plurality of rows of cleats disposed substantially end to end in the respective rows; means, relatively to position the adjacent ends of the cleats in each row in coöperative foldable relationship and to aline transversely thereof the cleats in the respective rows; and mechanism for connecting the rows of cleats by side material and foldably connecting adjacent cleat ends in said relationship.

28. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; side material positioning means; means relatively to position the adjacent ends of said cleats in coöperative foldable relationship; and mechanism to connect by wire the said adjacent cleat ends in said relationship.

29. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; means relatively to position the adjacent end of said cleats in coöperative foldable relationship; mechanism for foldably connecting said adjacent cleat ends in said relationship; and power-operated means for relatively feeding the cleats and said [fol. 1134] mechanism.

30. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; means relatively to position the adjacent ends of said cleats in coöperative foldable relationship; mechanism for foldably connecting said adjacent cleat ends in said relationship; power-operated means for relatively feeding the cleats and said mech-

anism; and auxiliary manually operated means for relatively feeding the cleats and said mechanism.

31. A machine for making box blanks comprising, in combination, work-controlling means to receive a plurality of pairs of cleats, each pair arranged side by side and the respective pairs being disposed substantially end to end, said means being constructed and arranged relatively to position the adjacent pairs of cleats in coöperative foldable relationship; and mechanism for securing side material to said pairs of cleats and foldably connecting said pairs in said relationship.

32. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a succession of cleats; means to provide successive spaces between the adjacent cleat-ends to position said ends in coöperative foldable relationship; and means foldably to connect said adjacent cleat ends in succession in said relationship.

33. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a succession of cleats; means to provide successive spaces between the adjacent cleat-ends to position said ends in coöperative foldable relationship; and means for applying wire to said adjacent cleat-ends in succession for foldably connecting them in said relationship.

34. A machine for making box blanks comprising, in combination, work-controlling means to receive a plurality of cleats disposed substantially end to end with adjacent ends in coöperative foldable relationship; means foldably to connect said adjacent cleat ends; and means to position adjacent cleat ends in said coöperative foldable relationship preparatory to said connecting operation.

35. A machine for making box blanks comprising, in combination, a pair of cleat-positioning means side by side and each for a succession of cleats disposed substantially end to end; a series of cleat spacing devices for each said positioning means, including one for an end cleat of a blank and one corresponding to each cleat interval, to position the end cleats of a blank and to position the adjacent cleat ends in coöperative foldable relationship, the spacing de-

vices of one series being respectively aligned, transversely of said cleats, with corresponding devices of the other series, to position cleats in transversely alined pairs for individual side sections of the box; and means to secure substantially continuous lengths of wire from end to end of the blank, and across the cleat intervals.

36. A machine for making box blanks comprising, in combination, work-controlling means for positioning a plurality of box sections in coöperative foldable relationship; and mechanism for foldably connecting said sections.

37. A machine for making box blanks comprising, in combination, cleat-positioning apparatus for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; and means to secure side material to said adjacent cleat ends and foldably connect the same in said relationship.

38. A machine for making box blanks comprising, in combination, controlling means constructed and arranged to position a plurality of box sections in coöperative foldable relationship; and means for securing lengths of wire to said sections for flexibly connecting the same in the form of a foldable blank.

39. A machine for making box blanks comprising, in combination, cleat-positioning apparatus for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; fastener-applying means for securing side material to said cleats and flexibly connecting said adjacent cleat ends; and means for relatively feeding the cleats and fastener-applying means.

40. A machine for making box blanks comprising, in combination, work-controlling means constructed and arranged to position a plurality of box sections in coöperative foldable relationship; and means for flexibly connecting the adjacent box sections at a plurality of points along their adjacent edges, said last named means being adjustable to vary the distance between said points of connection.

41. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive cleats dis-

posed substantially end to end in a plurality of rows, and constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; means to adjust the distance between the rows of cleats; and fastener-applying means, adjustable to suit the adjustment of the cleat rows, flexibly to connect the adjacent cleat ends.

42. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive cleats dis- [fol. 1135] posed substantially end to end in a plurality of rows and constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; means to adjust the distance between the rows of cleats; and fastener-applying means, adjustable to suit the adjustment of the cleat rows, for securing wires along the respective rows of cleats and flexibly connecting the adjacent cleat ends.

43. A machine for making box blanks comprising, in combination, work-controlling means for positioning a plurality of box sections, said means being relatively constructed and arranged to position their respective sections in coöperative foldable relationship; and means for flexibly connecting the adjacent box sections, said means being adjustable for so connecting said sections at any one of a plurality of points along their adjacent edges.

44. A machine for making box blanks comprising, in combination, cleat-positioning apparatus for a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; and means for securing binding wire progressively along said cleats and to connect the adjacent cleat ends in said relationship.

45. A machine for making box blanks comprising, in combination, cleat-positioning means to receive a plurality of cleats disposed substantially end to end; means for connecting adjacent ends of said cleats; means to maintain a coöperative foldable relationship between the adjacent cleat ends while they are being connected; and means for relatively feeding the cleats and said connecting means.

46. A machine for making box blanks comprising, in combination, work-controlling means constructed and arranged

to position a plurality of box sections in coöperative foldable relationship; fastener-applying mechanism for connecting the adjacent box sections; and means for relatively positioning one of said box sections and said fastener applying mechanism for applying a fastener in the desired relation to an edge of said section.

47. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive cleats disposed substantially end to end and constructed and arranged relatively to position adjacent cleat ends in cooperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat ends; and means relatively to position one of said cleats and the fastener-applying means to apply a fastener in desired relation to the end of a cleat.

48. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in cooperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat ends; feeding means for relatively feeding said cleats and the fastener-applying means; and means operatively connected with said feeding means for relatively positioning one of said cleats and the fastener-applying means to apply a fastener in desired relation to an end of said cleat.

49. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in cooperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat ends; a power operated feeding means relatively to feed the cleats and fastener-applying means; and means relatively to feed the same independently of said power-operation of said feeding means.

50. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat-ends in coöperative foldable relationship; fastener-apply-

ing means foldably to connect the adjacent cleat ends; feeding means for relatively feeding the cleats and fastener-applying means through feed steps of predetermined length; and means having operative connection with said feeding mechanism for determining the positions of the fasteners in desired relation to the ends of the cleats.

51. A machine for making box blanks comprising, in combination, cleat-positioning apparatus to receive a plurality of cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in cooperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat ends; feeding means for relatively feeding the cleats and fastener-applying means step-by-step, the same being adjustable to vary the lengths of feeding steps; and means for determining the position of a fastener relatively to one of the cleat ends.

52. A machine for making box blanks comprising, in combination, cleat-positioning means to receive cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat ends; means for feeding the cleats past the fastener-applying means; and means to support the [fol. 1136] cleat-positioning apparatus to permit it to return it to its starting point.

53. A machine for making box blanks comprising, in combination, cleat-positioning means to receive cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat ends; and means to support the cleat-positioning means for a cycle of movement past the fastener-applying means and then reversely to its starting-point.

54. A machine for making box blanks comprising, in combination, mechanism for attaching binding wire; means to present progressively to said mechanism a plurality of cleats disposed substantially end to end, for securing wire along and connecting said plurality of cleats; and means to provide a coöperative foldable relationship of the adjacent ends of said cleats so to be connected.

55. A machine for making box blanks comprising a plurality of groups of work-controlling means, each group for a separate individual side section of the box, and comprising means to support cleats and side material in coöperative relationship for being secured together to form a box side, and each group having means to support its cleats and side material in a relationship to enable the same to be folded coöperatively with corresponding portions of a side section controlled by another group; and means to secure wire binding to the respective side sections and to provide wires for connecting one section and another in foldable relationship.

56. A machine for making box blanks comprising, in combination, cleat-feeding means to feed a succession of cleats disposed substantially end to end; means to provide successive spaces between the ends of said cleats preparatory to securing together side material, binding wires and said cleats; and fastener applying means for securing binding means to said succession of cleats; said several means being so constructed and arranged that when the binding means is initially secured to an advance cleat in said succession, the cleat-feeding means thereafter feeds the cleats, and therethrough the binding means progressively past the fastener-applying means.

57. A machine for making box blanks comprising work-positioning means to receive a plurality of rows of cleats disposed substantially end to end for a box blank; means for maintaining spaces between the successive adjacent ends of the cleats in each row and to maintain said inter-cleat spaces alined transversely of the rows; fastener-applying means for securing binding wire to side material and the two rows of cleats so spaced; and means relatively to feed said rows of cleats and the fastener-applying means to secure continuous binding wire progressively from the advance ends of the initial cleats of the rows to the rear ends of the final cleats of the rows and across said inter-cleat intervals.

58. A machine for making box blanks comprising work-positioning means to receive a succession of cleats; fastener-applying means for securing binding means to said cleats; means for feeding said cleats relatively past the fastener-applying means; means to predetermine successive

spaces between the ends of cleats for a box blank, over which spaces the binding means is secured; and means for producing lengths of unattached wire beyond the ends of rear cleats for a blank preparatory to securing binding means to the next following blank.

59. A machine for making box blanks comprising, in combination, cleat-positioning means to receive cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat-ends; feeding mechanism for feeding the cleats relatively to the fastener-applying means; and means for varying the normal feed by said feeding mechanism.

60. A machine for making box blanks comprising, in combination, cleat-positioning means to receive cleats disposed substantially end to end, constructed and arranged relatively to position adjacent cleat ends in coöperative foldable relationship; fastener-applying means foldably to connect the adjacent cleat-ends; feeding mechanism to feed the cleats step by step relatively to the fastener-applying means; and means for varying the step feed by said feeding mechanism.

61. A machine for making box blanks comprising, in combination, work-controlling means to receive a plurality of cleats disposed substantially end to end and pertaining to non-adjacent sides of the intended box, constructed and arranged to space said cleats apart endwise a predetermined distance appropriate to intended dimensions of the box side between said non-adjacent sides, to permit said cleats to be foldably connected and folded into substantially parallel relationship; and means for foldably connecting the cleats so spaced.

62. A machine for making box blanks comprising, in combination, work-controlling means to receive a plurality of cleats disposed substantially end to end and pertaining to intended oppositely disposed sides of the box, constructed and arranged to space said cleats apart endwise a predetermined distance permitting the cleats to be foldably con- [fols. 1137 & 1138] nected and folded into oppositely disposed relationship; and means for foldably connecting the cleats so spaced.